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PSYCHOSIS ASSOCIATED WITH TETANY.*

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Psychoses that occur in association with well-differentiated somatic disorders are of much interest from the opportunities they offer of correlating mental manifestations with tangible pathological factors. This is particularly true of the psychoses associated with disorders of metabolism.

Among the less common toxic mental disorders are those associated with tetany. While tetany is a disorder occurring in association with a variety of etiological relations, it seems to be agreed that a fundamental factor in its occurrence is disordered metabolism.

Although neurological manifestations dominate the clinical course of tetany, psychic disorders, apart from transitory episodes of disordered consciousness in association with the attack, have been but rarely observed.

Within the last few years we have had an opportunity of studying two cases with pronounced symptoms of tetany and a psychosis extending over a considerable period of time.

The first case, C. J., was a man aged 58. His family history showed no serious hereditary factors. He had been a farmer with average success and aside from a temperamental tendency to worry needlessly, and at times showing undue irritability, his life was free from anything unusual until he was 57 years old. At that time a son was convicted of a sexual crime and given a penitentiary sentence. The patient grieved deeply over this and from then on his health began to fail.

He complained much of pain in his stomach. His mood was continuously depressed. His sleep and appetite were much impaired and in a brief period he lost 30 pounds in weight. This condition brought about his admission

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to the psychopathic hospital of the University of Michigan on November 14, 1911.

Physically he was rather feeble and was moderately emaciated. The heart was not pathological. The blood-pressure was 142 and pulse 76. The red count was 4,510,000, the white 9260. The hæmoglobin was 80 per cent. In the lungs, broncho-vascular breathing was present over both apices. The cerebro-spinal fluid had 11 cells per c. mm. The albumen content was increased about six times over the normal. Nonne-Apelt test for globulin was faintly positive. Both blood and spinal fluid gave negative Wassermann reaction. The urine at first was not pathological. Later examinations showed varying numbers of granular casts and specific gravities ranging between 1008 and 1022. Most frequently these were found to be about 1015. Albumen or sugar were never present. After a few weeks the urine usually showed excessive amounts of indican. A report furnished by the laboratory of the University Medical Clinic stated, "The indican is enormously increased, running as high as 100 milligrams for the 24 hours." There were at this time few important neurological abnormalities. His station and gait were unsteady, but this seemed to be due to his general physical weakness. The pupils were normal in outlines and reactions. The fundus examination revealed an oedema of the retina of both eyes. The extraocular movements were jerky, but there were no paralyses. Muscular movements of the extremities and trunk were not peculiar. Sensory appreciation was keen and accurate.

There was no disorder of perceptions. His comprehension of questions and experiences around him was a little slow, but quite correct. He was perfectly oriented as to his situation. His mood was always sad. His content of thought largely concerned his complaints of gastric discomforts and a general attitude of discouragement.

On account of his gastric distress he was referred to the medical clinic which reported that the examination of the stomach contents showed "a typical achlorhydria with absence of free hydrochloric acid. The combined acids of the stomach gave a total acidity of from 5 to 10. There was marked hypermotility." He was put upon a finally divided diet and given hydrochloric acid. In the next two weeks he lost seven pounds. His mental condition varied from day to day. There were periods when he was mildly stuporous and gave little attention to questions. Attempts to draw him into conversation or carry through examinations made him extremely irritable. When he did reply there was a marked slowness in starting. As time passed he became more continuously stuporous and there were definite periods of unclearness in which he showed very little appreciation of his surroundings. Neurological symptoms became more pronounced. He was always in bed as he was too feeble to stand or help himself. The tongue was coarsely tremulous. The knee-jerks were increased, the left more than the right. All movements of the extremities showed spasticity. He had a peculiar frequent winking of the eyes that was often accompanied by twitching of the lower lid. The muscles about

the mouth showed a continuous tremor. The arms were usually held flexed at the elbows, the fingers extended and tightly approximated, the thumb adducted. There was seldom any relaxation from this position. Attempts at passive movements of the arms or legs were firmly resisted. Attempts at spontaneous movements were ataxic and carried through with coarse tremors. The abdomen was tense and somewhat distended. The bowels moved only with enemata, after which there was for a brief period a relaxation. He showed a greater degree of mental unclearness than previously. His spontaneous talk was more free, but the content of his thought was almost entirely concerned with ideas of an apprehensive character. He spoke of his head being "stove in from the wall falling on it." He remarked that he was "lying on the floor of the old ranch" and as he put his hands to his head he said, "See they are all blood." Several days later the stupor deepened and he lay in bed making no effort to speak or help himself. He gave no attention to visits from members of his family. His lower extremities were usually cold and the surface of the body was wet from abundant perspiration. There was a continuous flow of saliva from his mouth. For a brief period he had a febrile temperature, on one occasion reaching 102.6. The pulse during this time varied between 64 and 100. Twitching and jerkings of various muscles were usually present. These were especially marked in the muscles of the face, chest, arms, hands and the inner surface of the thigh. Tapping the muscles of the face or arm always induced a tetanoid contraction of the group of muscles irritated. There were characteristic Chvostek and Trousseau phenomena. On one occasion he suddenly collapsed; his pulse was weak and for a brief period respiration ceased. He soon rallied from this without special treatment.

A week later the muscular twitchings became less marked. He was more alert and clearer in his comprehensions, yet, even during these better periods, there were episodes of confusion and irrelevant remarks. The unclearness again became more continuous and visual and auditory hallucinations were prominent. He saw teams of oxen passing the windows, heard bells ringing and on one occasion he ran out on the hall trying to catch an imaginary train. Hallucinations were easily produced by suggestion. At all times he was disoriented. He talked much, his speech being largely of phantasies that had no relation to things about him.

Frequent examinations of the urine were made. The amount passed during 24 hours was always below the normal quantity. The lowest specific gravity was 1008, the highest 1022. A few hyaline and granular cases could always be found, but never any sugar or albumen. On account of the excessive amounts of indican that were frequently present he was referred for observation to the Clinic of Internal Medicine.

The results of their study form the subject of a contribution by Dr. Agnew (1) that was communicated to the Clinical Society of the University of Michigan in September, 1914. In a series of daily examinations extending over three months, the indican varied between a minimal excretion of .0107 gram during 24 hours and a maximal of .3718.

Experiments were undertaken to find out whether this might be influenced by diet or medication. At no time during his residence was his diet rich in animal protein. For a time he was fed upon a diet composed largely of milk cultures of *Bacillus bulgaricus* and it seemed as if the output of indican was lessened. The largest amounts were eliminated during a period of active purgation and restricted diet. On the whole, it seemed that some explanation other than intestinal putrifaction was required to explain the marked variations that occurred in the quantities eliminated. Dr. Agnew comments that he was unable to find in the literature comparable instances of elimination of such excessive amounts of indican as occurred in this case. The average of 41 determinations was .074 gram, an amount seven times as great as the maximum usually regarded as within normal limits. It was not possible to correlate differences in excretion and variations in his mental state. On January 27, or about 10 weeks after his admission, his stupor deepened and his talking was confined to replies to questions that were put to him with unusual emphasis. The muscular twitchings were again marked. On February 7 he was more active and clearer in his comprehension. He complained much of pain in the back of his head and in his arms.

On February 10 there was pronounced muscular irritability. The muscles of the arms were tensely contracted, the arms partly flexed and the elbows and the hands extended in the accoucheur position, so characteristic of tetany. Chvostek's sign and Trousseau's phenomena were well marked. On February 28 visual hallucinations were very vivid. He picked at the bed clothes and at times he was terrified by what he saw. Repeatedly he spoke of an explosion occurring and reacted to this with great fear.

On March 23 he was unclear in comprehension. Visual hallucinations were very active and he often reached into the air for imaginary objects. His mood changed from one of apprehensiveness to one of good nature. He frequently laughed at trivial happenings. The pupils were unequal, but were normal in their reactions. The right eyeball was more prominent than the left. The surface of the body was strikingly cool to the touch. When tested with the surface thermometer the temperature over the lower legs registered 83.7 and over the greater part of the body it varied between 90 and 93.5. The right side of the body was two degrees warmer than the left. The systolic blood-pressure at different examinations varied between 130 and 140.

During April his mental condition varied between periods of stupor and mild restlessness. In this latter phase there was less unclearness of consciousness. On a few occasions there was excessive perspiration and an unusually large secretion of saliva.

May 5. This morning he cried much in paroxysms as if in pain. At such times the muscles of the arms and legs were tensely contracted. In the intervals between contracture he was easier, but held himself in rather guarded attitudes. At other times there were coarse twitchings of various groups of muscles. These were very noticeable in both flexors and exten-

sors of the arms and in the interossei. Less frequently there were slow tonic contractions of the arms. In these the hands were drawn into the accoucheur position. Chvostek's and Trousseau's phenomena were easily demonstrated.

He developed decubitus over the sacrum and iliac crests. With increasing weakness and with persistence of the muscular irritability he continued to fail until his death on May 13, 1919.

The autopsy was performed by the department of pathology of the university a few hours after death.

The pathological diagnosis was "Ascending thrombo-phlebitis of the right iliac and femoral veins. Embolism and thrombosis of the pulmonary



FIG. 1.—Photograph of wax model of reconstructed pituitary body of Case 1, showing relations of cyst. Magnification 10 times.

vessels. Purulent pneumonia. Emphysema. Atrophy and passive congestion of all organs."

The gross examination of the nervous system at the autopsy showed little that was pathological, excepting a rather marked congestion of the veins of the pia mater. The brain weighed 1170 grams.

A more detailed examination of the brain after fixation in 10 per cent formalin revealed few abnormalities. The most notable finding was an unusually large cyst of the pituitary body situated at the proximal part of its stalk. Subsequently, the entire pituitary body was cut into serial sections and the details and relations of the abnormality became more apparent. The cyst measured 4×2.5 mm. in diameters. It lay almost entirely in the anterior or glandular portion of the pituitary body and

took up about one fifth of its area. It had a wall of epithelial cells and its contents consisted of a fine granular substance with a few larger masses. The greater part of this substance stained deeply with basic stains. Scattered among these masses were what appeared to be disintegrating cells and nuclei. These had acidophilic staining qualities. The cyst pressed upon the nervous portion of the pituitary body and considerably distorted its normal form. The relations of the cyst are shown in the photograph of a model reconstructed from serial sections of the pituitary body magnified ten times. (Fig. 1.)

Histological studies of the thyroid gland showed that the greater number of its follicles were changed into small cysts filled with colloid contents. The parathyroids were carefully dissected out, but only one was found as an independent structure. In size this measured 5 x 3 mm. It was free from hemorrhages or any other demonstrable changes. The only trace of other parathyroid tissue was a mass embedded within the thyroid gland. This appeared as a compact island of richly cellular structure surrounded by a connective-tissue capsule. It measured 3 mm. in cross-section. Its stroma was moderately dense, but otherwise it was not pathological. A thorough and detailed histological study was made of the central nervous system. This showed severe and widely distributed changes among the nerve cells, both in the cortex and in ganglionic grouping elsewhere through the nervous system.

In the cortex the greater number of the large and smaller pyramids in all layers had shrunken bodies and the cell as a whole stained deeply. The nucleus was shrunken and stained diffusely. A far more common type of change was found in cells with swollen bodies from which most of the chromophilic granules had disappeared. The ground substance of these cells stained diffusely and the processes were visible for longer distances than usual. The nucleus was poorly differentiated from the other cell contents. In a number of cells the nucleus was pushed toward one corner of the base of the cell. Most cells contained excessive amounts of yellow pigment. The larger pyramids of the anterior cerebral convolution and the Betz cells of the paracentral lobule showed alterations of a characteristic form. The bodies of these cells were swollen. The Nissl granules had disintegrated and were in a process leading to disappearance. This began at one side of the base of the cell and spread towards the nucleus. Ultimately the cell body was filled with a pale, finely granular content and the nucleus was pushed towards the margin of the cells. Similar changes were observed among the cells of the thalamus and of the medulla. In type this change resembles that seen in retrograde reactions of the cell following injury to its fiber process.

In preparations to show fat the cell bodies quite generally showed relatively large amounts of lipoid pigments. Often these extended into the processes of the cells. The lymph spaces of the vessels were crowded with fatty pigments. The neuroglia showed no very definite alterations. Many cells had well-developed bodies, but these were usually shrunken in outline and of a regressive type.

A second case of tetany with a severe mental disorder was more recently observed. This was a man aged 46 at his admission to the psychopathic hospital on March 30, 1918. He came of a family that was free from nervous or mental disorders. His childhood and early life were not notable. He had a limited school training and was not regarded as sub-normal. For the greater part of his adult life he worked at unskilled mechanical occupations. He was good-natured and upright in character. He never used alcohol, but smoked and chewed in a moderate way. He never married.

His health was good until the age of 42 when he had a sudden attack of sharp pains just beneath the right patella. Soon after this his right leg dragged as he walked and the muscles of this leg were stiff, or as he expressed it "they knotted up." This stiffness gradually extended up the right thigh and later the right leg was similarly affected. His back became stiff and it was difficult for him to bend over. When he arose from a chair his movements were strikingly slow and he had to aid himself by support. This condition grew progressively worse until about two years ago when his eyesight began to fail him. He was able to do a little work about the farm. While hoeing corn one day in the summer of 1915 he suddenly began slipping backwards with increasing rapidity and finally fell to the ground. He remarked that he felt as though his thigh and leg muscles became knotted and he was unable to control them. He frequently fell forwards and would lie for a few minutes with the legs flexed tightly against the thighs, the thighs flexed on the body and the trunk and head bent forward with arms flexed. He complained a good deal because he was unable to sweat.

He worked in a limited way until the summer of 1917. By that time his condition was much worse. In September, 1917, while walking he suddenly stopped and stood in a dazed condition for several minutes. He seemed incapable of directing his movements. The following morning he was found lying on his bed in an unclear mental state. He had soiled his bed with urine and seemed unconcerned as to his situation. When urged to come to breakfast he replied, "No, I must not eat. It is all wrong. Everything is wrong. Bottom side up. I am lost, lost. Nothing but eternal punishment from now on." For about a week he remained in bed. On some days he was fairly clear in his comprehension, but for the greater part of this period he was dull and confused. A few weeks later he was committed to the State Insane Hospital at Kalamazoo. There his condition showed a peculiar variation between periods of clearness and marked confusion. He was disoriented and his mood was usually depressed. The content of his thought was that "everything was wrong." Much of the time he refused to talk, at other times he talked rapidly for several minutes in a rambling manner and with little coherence of thought. There were at that time no gross somatic disorders. Neurologically there was some unsteadiness as he walked. The right foot was moved more awkwardly than the left. The right knee-jerk was increased more than

the left. The fingers were tremulous and the tongue when extended deviated to the right. He spoke in slow, low tones. The fundi of the eyes showed venous congestion. After three weeks he remained mentally clear and his friends regarded him as cured. There remained, however, an amnesia for the period in which he was unclear while in the hospital. About December 1, 1917, he returned home. The muscular disorder continued and his eyesight was less good than formerly. There were occasional severe tonic contractions of groups of muscles that often caused him to cry out with pain. Sometimes the hamstring muscles would draw up tightly flexing the leg. At times the muscles of the foot would be suddenly contracted. At other times those of the thigh. Occasionally the head was drawn back quickly and held stiffly for some time. He was always clumsy with his hands and when he attempted to grasp an object his hands and arms showed a coarse tremor. This tremor was absent when the extremities were at rest, but there was a more or less constant movement of an athetoid type. Quick jerkings of isolated groups of muscles were rather frequent. He complained much of pain that occurred during the muscular contractures. The increase of these disturbances led to his admission to the neural wards of the University Hospital on March 19, 1918. At that time there were few evidences of mental disorder aside from a moderate impairment of memory. The neurological examination by Professor Camp showed his gait to be weak and staggering and somewhat ataxic. The pupils reacted sluggishly to direct light, but were normal in accommodation. There were no extraocular palsies. There was a pronounced speech defect resembling that of paresis. The tendon reflexes of the arms were increased. Those of the legs were normal, excepting for an ankle clonus. Babinski's reflex was present in both great toes. There was loss of position sense in toes. At intervals there were spontaneous jerkings of the arms and legs. A few days after his admission there developed a stupor that increased until he was quite helpless. In this condition he was transferred to the wards of the psychopathic hospital.

He was then unable to stand or walk. There was total loss of sphincter control. The tissues over the sacrum and upper back showed beginning pressure necrosis and there was an acute infection of one great toe. Temperature was normal. The pulse rate 76 with occasional arrhythmia. The blood-pressure was 130-90. The respirations were irregular and varied much in depth. The right side of the face was held more tensely than the left. The pupils were irregular in outline. Direct reaction to light was sluggish in both eyes. Accommodation was normal. Both fundi oculi showed early arteriosclerotic changes. The tongue and lips were tremulous. He spoke with marked dysarthria. As he lay in bed there were occasional coarse tremors and twitching of isolated muscles in the extremities. At irregular intervals there was a general contraction of all parts of the body. As the tenseness of this increased, there developed a coarse general tremor. The contractions seemed more marked on the left than on the right side. Both Trousseau's and Chvostek's phenomena

were plainly elicited. The mouth was held open and was drawn towards the left. The arms were flexed at the elbows and the hands and fingers were drawn into the accoucheur position. The eyes were fixed directly ahead. During the attack the pupils dilated widely. The forehead was wrinkled transversely and the lids raised. Generally the head was drawn backward. Usually he cried out in pain during an attack.

In the intervals between attacks there were no reactions to tests for pain or tactile stimuli. This might well have been accounted for by the marked mental stupor that was continually present while under observation. All tendon reflexes were increased. There was ankle clonus and a well-marked Babinski reflex in the right foot. The urine had a specific gravity of 1026. There was no albumen, sugar or acetone. There was a strong reaction of indican. The sediment showed numerous hyaline casts. The blood showed, on several examinations, red cells varying between 3,600,000 and 4,160,000. The white cells varied between 11,970 and 12,735. The differential count showed small lymphocytes 9.5 per cent, large lymphocytes 10.5 per cent, transitional forms 2.0 per cent, polynuclears 78 per cent. The blood urea varied between 0.123 and 0.1444. The cerebrospinal fluid was under normal pressure. There was no increase in the cells nor in the albumen. There was no change in the gold sol series. Both blood and spinal fluid gave a negative Wassermann reaction.

Mentally he was at all times stuporous. When roused he would reply to simple direct questions. His responses showed that he was disoriented and had no interest in his surroundings. During the first few days in the hospital there were outburst of loud cries as if he were apprehensive. He would cry out, "Kill him. Kill him. I won't be dead." After a few days the stupor deepened so that he was unresponsive to questions or to anything about him. The neurological features also changed. The muscles of the body were almost constantly in a continued tonic contraction. This could not be interrupted in any way. In periods of less rigidity muscle contractions followed light tapping of the body of the muscles. The pupils were continually dilated and did not narrow even with strong light stimuli. From the first there had been no control of bowel or bladder sphincter. The flow of urine would cease during the periods of contraction and during relaxation would flow away freely. His failure was rapid. The breathing became of the Cheyne-Stokes type. The pulse rate increased to 102 and there was a slight rise in temperature. Death occurred nine days after admission.

The autopsy was held 10 hours post mortem. The gross inspection of the body showed abundant head and body hair. The skin of the forehead was coarsely roughed by small granular elevations.

There was a small superficial decubitus over the left elbow and a large blister over the posterior surface of the right heel. There was a larger and older decubitus over the right buttock.

The pupils were 4 mm. in diameter and had irregular margins. Post mortem rigidity was firm throughout the body.

On cutting through the abdominal wall there was found a recent sub-peritoneal hæmorrhage spreading out over the lower half of the recti muscles.

There was no trace of the thymus gland. A few lymph nodes of the mediastinal region were enlarged. Aside from congestion of the posterior parts of the lungs, they were not grossly pathological. The heart showed no gross changes. The stomach was moderately distended. The pyloric opening was not pathological. The gastric mucosa was deeply congested and unusually soft. The intestines showed no gross abnormalities. The spleen was not enlarged. Its substance was soft and deeply congested. The liver and kidneys showed no gross pathological changes. Both adrenals were flabby and the medullary parts quite soft.

Head.—The scalp was not adherent. The bones of the calvarium cut with normal resistance. The diploë were moderately congested. The dura mater was not adherent. Its inner surface was free from deposits. The longitudinal sinus was empty. The pia-arachnoid was moderately oedematous. There were scattered patches and streaks of thickening along the blood-vessels. The basal vessels were free from sclerosis. The brain weighed 1460 grams. Its consistency was moderately firm. Gross dissection revealed no abnormalities. The histological studies of the internal organs and of the nervous system were made by Dr. Adeline Gurd, pathologist of the hospital.

The heart showed no pathological changes in its muscle. The congested areas of the lungs showed deeply engorged veins and moderate accumulations of polynuclear leucocytes in scattered alveoli.

The liver showed moderate cloudy swelling of its parenchymal cells and scattered alveoli with some fatty degeneration.

The kidneys presented focal areas through the cortex in which the epithelium of the tubules was somewhat atrophic, but nowhere was there any marked parenchymatous degeneration. In the subcapsular parts there were focal necroses of the interstitial cells and near these occasional tubules were obliterated.

The adrenals showed rather marked vacuolization of the cells of the cortex.

The pituitary body was not normal. In volume it was somewhat larger than usual. The vascular sinuses of the anterior lobe were congested with blood. The cells of the glandular portion were not pathological. The posterior lobe presented a number of small cysts and one unusually large that projected from the upper surface of the base of the stalk of the nervous portion. These cysts were all filled with a colloid-like contents. A number of small cysts invaded the intermediate portion of the body.

Thyroid Gland.—Sections from several regions of the gland showed the alveolar spaces filled with colloid substance. Numbers of alveoli were torn apart and formed large confluent spaces with colloid contents.

Parathyroid Bodies.—It was possible to dissect out three structures that showed the normal histology of these glands. There was no evidence

that these were in any way diminished in amount or pathologically changed. There were no hæmorrhages.

Testicles.—Sections from these showed no pathological changes.

Bone Marrow.—This, taken from the femur, showed a coarse meshed reticulum with small islands of cells of the usual type.

Muscle Fiber.—Sections from the recti muscles were of normal structure.

Central Nervous System.—A thorough histological study was made from all regions of the cortex by various special methods. The pia mater was fairly normal in width. Among its fibers there was an increase of small phagocytic elements. These were chiefly transitional forms of cells filled with pigments.

The cortex showed widespread and severe alterations of nerve-cells, fibers, neuroglia and blood-vessels. There was little difference in the character of these through the various regions.

The first layer showed no definite changes.

Among the lower layers the nerve-cells were all severely changed. There was no distinct loss in numbers of cells, but all showed varying degrees of disintegration of their chromophilic contents. In many cells this loss of Nissl granules was complete. The cell appearing as a pale, shadowy structure. Cells of large volume showed details of this change more clearly. The bodies of these cells were swollen. The Nissl granules first disappeared from the side of the cell and spread towards the nucleus. The nucleus in these alterations became placed eccentrically towards the margin of the cell. In the most extremely altered cells no contents aside from the nucleus were discernible, and the nucleus had pushed out the margin of the cell. Commonly the nuclear outline was uneven and the nucleolus had disappeared. The neuroglia nuclei showed a large number of satellite forms. The majority of the nuclei were small or of medium size. Their outlines were sharply defined and only rarely were they surrounded by cytoplasm. There were many abnormal forms of neuroglia nuclei. A common type of these were small, deeply staining nuclei having a mulberry form. Others were of more irregular outline, oblong or occasionally of a dumb-bell form. With Mann's stain there were a small number of spider forms and a few amœboid cells. The adventitia, media and elastica of the blood-vessels were unchanged, but the endothelium of the vessels was severely altered. These changes were of two types, one apparently regressive in character in which the cells were shrunken and highly vacuolated, the other progressive with swollen cells staining deeply and occasionally showing mitoses.

The capillaries showed occasional loosening of one end of their endothelial cells which appeared swollen and as if there were beginning formation of a new capillary. The walls of the blood-vessels were commonly bordered by large accumulations of fatty products.

Cerebellum.—The cells of Purkinje were severely changed, presenting appearances quite similar to those of the cortex of the brain. In a number of places the larger of the cells of Purkinje were much vacuolated and the granule cells in these foci were unstained.

Pons.—Cells scattered through the nuclear collections in the pons showed the same type of chromatolysis seen in the larger cells of the cortex. At one point in the pons there was a small recent hæmorrhage with no reactions in the neighboring neuroglia.

Medulla.—The larger cells of the cranial nerve nuclei showed the same changes as those in the pons and elsewhere.

Spinal Cord.—The nerve cells of the gray substance everywhere presented severe alterations. In type these corresponded to those seen in the cortex. The cells of the ventral horns were especially striking in their changes. They showed chromatolysis, spreading from the periphery towards the nucleus, which in most cells lay close to the margin of the cell body.

There were no coarse fiber degenerations, but scattered through the white columns were fibers whose myelin showed stretches of fine degenerative changes and many axis cylinders were distinctly pathological. Among these there were numbers of amœboid glia nuclei.

Peripheral Nerves.—Sections from both sciatic nerves showed no fiber generation or interstitial changes.

The two cases that we are reporting presented during their course the neurological symptoms of tetany in a very characteristic way. In both cases there was pronounced neuromuscular irritability with attacks of tonic contractures of groups of muscles. These were usually painful and were present at some time or other in practically all of the muscles of the head, extremities and trunk. These attacks came on suddenly and lasted from a few seconds to longer periods of several hours' duration. In both cases Chvostek's and Trousseau's phenomena were easily obtained throughout the entire course. In Case I there were secretory anomalies. These were marked increase of saliva and excessive perspiration. The lowered surface temperature that was observed in Case I is a symptom that has sometimes been noted (2, 3, 4). An interesting and infrequently observed symptom was the involvement of the intrinsic muscles of the eyes during the tetanic spasm. In Case II we repeatedly observed the pupil dilating widely during the tonic contracture of the other muscles of the body.

Psychic disorders in tetany are of rare occurrence. Attention was first directed to the subject in a contribution by Tonnellé (5) in 1852, in which he comments on the interrelation of a tendency towards spasm and psychic disorders and urges "the necessity of distinguishing between a pure form of tetanus and that accom-

panied by psychic disorder." It is not clear that his comments concern tetany, as it is now differentiated among nervous disorders. A similar lack of clearness of distinction is found in the comments of Arndt (6) in his text-book of 1883. The description given there seems to concern the motor abnormalities that occur in catatonia or in the agitated depressions rather than those of true tetany.

The first description of a psychic disorder that later on has been shown to be associated with true tetany seems to have been that of Kussmaul, who in 1869 (7) described a case of tetany associated with gastric dilation in which there occurred psychotic disturbances, such as periods of stupor and incoherent speech. The subject was briefly mentioned by Kraepelin in the second edition of his text-book that appeared in 1887 (8). In this he stated that he had observed in tetany transitory delirium with hallucinations. Two cases were reported by Müller in 1888 (9) which showed psychotic symptoms with gastric tetany.

The first contribution presenting a critical consideration of the subject is one by Frankl-Hochwart published in 1888 (10). In this he describes in detail three cases of tetany in which there occurred confusion, hallucinations and apprehensive excitement.

As the literature dealing with the subject increased it was found that the interrelation between psychotic disorders and tetany presented different clinical relationships. There were a number of case reports in which the psychotic disorder was limited to transitory episodes of unconsciousness appearing in relation with the attack of muscular spasm. Such were the cases reported by Weiss (11), Pietrzikowski (12), McKendrick (13), Sievers (14), Soelder (15), and Eiselsberg (16). In another report by Hoffman (17) the symptoms resembled those occurring in hypothyroidism.

In another group of cases there were psychotic disturbances, but the tetany was associated with other fairly well-defined neuropsychiatric disorders. Such were cases of tetany and epilepsy described by Müller (18), Velics (19), Herold (20), Westphal (21), v. Jaksch (22), Curshmann (23), Saiz (24) and Hirschl (25).

In another group there was an interrelation between tetany, psychic disorder and hysteria. Cases of this type have been reported by Simon (26), Minor (27), Nikolajevic (28), Schlesin-

ger (29), Blažiček (30), Freund (31), Westphal (32), Krafft-Ebing (33), Cristeanu (34) and Curshmann (35).

There is also a small group of cases in which there was an interrelation of tetany, psychic disorder and alcoholism. Such were cases reported by Frankl-Hochwart (36) and Schultz (37, 38).

Of special interest in connection with this study is the group of cases in which the psychotic disturbances are much more extensive in their development and of longer duration. The symptoms in these constitute in their character and course a fairly well-defined psychosis.

In the years following the important contribution of Frankl-Hochwart in 1889 (10) there appeared, largely in foreign literature, a considerable number of case reports of psychoses associated with tetany. These are by Loeb (39), Bouveret et Devic (40), Fleiner (41), Hochhaus (42), Schultze (43), Kuckein (44), Albu (45), Luther (46), Voss (47), Pick (48), Trimble (49), Lapinski (50), Economo (51), Sternberg and Grossman (52), Bonhoeffer (53) and Hirschl (25).

There is a close similarity in the symptoms that have been described in these reported cases that gives to the clinical picture something quite characteristic although not definitely specific. These consist of periods of stupor, with a dominant sad mood and the expression of mild delusions of fear and sadness. Contrasting with this there often occur episodes of excitement with mental uncleanness, hallucinations of hearing and marked apprehensiveness. At other times there may be complete lucidity and fairly normal mental reactions. The psychotic features in the same case commonly show a great variability, different phases coming and going with changes of the constitutional and neuro-muscular conditions.

In their characteristics and course they are in general similar to types of mental disorders that occur in toxic disorders that affect the central nervous system. This toxic character is further evidenced in the type of pathological change that is present among the nerve-cells of the brain and cord. Alterations of a similar type have repeatedly been observed in the nervous system in pellagra, in acute and sub-acute alcoholic mental disorders and in

cases of delirium of undetermined, but presumably toxic nature. Additional evidence of the toxic quality of the disorder is the variability of the symptoms with the changing somatic conditions, and by the specific disorder of metabolism that was present in Case I of this report.

Lapinski (50) has directed attention to this variability of phases in the report of a case of tetany with gastro-intestinal disturbance. When diarrhœa was present the consciousness was comparatively clear. When this ceased the mental condition changed. When constipation was present the patient sometimes showed the spasms of tetany and signs of being in pain, or at other times there was extreme unclearness with excitement. Our own observations agree with this. In Case I of this report there were several short periods of diarrhœa and during each of these it was noted that the man was brighter and showed more vigor. In several periods of constipation there was either stupor or excitement. A similar variability has been observed in toxic psychoses of other etiology and may bear some relation to periodical variations. The excessive production of indican in Case I may have some specific relation to the metabolism disorders of tetany, as it has been previously noted in cases described by Hochhaus (42) and by Stewart (67). While an excessive output of indican is supposed to have some relation to intestinal disorder, it is of interest to note that in Case I efforts to reduce putrification of intestinal proteid substances through regulated diet and in spite of active purgation, the quantity of indican produced could not be lessened.

As regards the etiological grouping of the tetany cases that have shown psychotic disorders, a survey of the literature shows that the larger number of psychoses have occurred in the tetany associated with gastro-intestinal disorders, usually with dilatation of the stomach. A somewhat smaller number of cases have been observed in the so-called idiopathic tetany or occupational tetany in the grouping of Frankl-Hochwart (2). The psychotic manifestations have been similar in both etiological groups. A few cases have occurred in connection with disease or removal of the thyroid gland "tetania strumipriva." Such cases now are known to be dependent upon pathology of the parathyroid glands which may have become involved in the disturbances of the adjacent

thyroid gland. While some of these cases have shown symptoms similar to the cases of the other two groups, the majority have shown a greater prominence of the symptoms seen in psychotic disorders occurring with myxœdema.

In a considerable number of contributions to the subject of tetany, both with and without psychosis, studies have been made of the histopathological changes in the central nervous system. Weiss (54), Blažiček (30), Sarbo (55), Köster (56), Ferraninni (57) and Proescher and Diller (58).

In connection with these must be considered the changes that have been found in the nervous system in instances of tetany produced experimentally by removal of the parathyroids. Vassale and Friedman (59), Vassale and Donnagio (60), Russell (61) and Babonniex et Harvier (62). The most detailed descriptions of histological changes are given in the contribution by Ferraninni (57). This was a study of a case of tetany associated with gastric dilation, but with no psychic disorder. Death occurred ten days after the appearance of the tetany. There was found moderate hyperæmia of the pia mater of the brain and cord and their substance. The nerve-cells were deformed in many ways. The most prominent change was central chromatolysis of the cells with eccentric displacements of the nucleus. There is a close agreement in the type of cell change noted in all these reports with those present in the two cases we have studied.

In a case described by Pick (48) the blood vessels of the nucleus denatus and central ganglion were calcified, but no mention was made of the changes among the nerve-cells. In the case of Luther (46) the comments are limited to changes in the gross appearance of the nervous system.

An interesting study was made by Russell (61) upon the brains of dogs that had their parathyroids removed by MacCallum in his studies of calcium metabolism (62) in relation to these glands and tetany. The cortex cells in these brains showed chromatolysis in the neighborhood of the nucleus. In cases of long duration very few granules were left in the cells. The nucleus was dislocated and even expelled from the cell body. The protoplasmic processes were more visible than under normal conditions. We have seen identical changes in similar experi-

ments made by Koch in the histological laboratory of Michigan University.

There are, on the other hand, reports of studies of the central nervous system of fatal cases of tetany in which no pathological changes were found. Such were the cases of Blažiček (30), Hochhaus (42) and Köster (56).

Both from the clinical course and the histopathology of the cortex of our two cases, it seems warranted to consider their etiology as one of some toxic disorder of metabolism. It is possible that Case I may have some relation to gastric disturbances, although the constricted pylorus commonly found in cases of this type was not present.

Knowing the interest that has been developed in the relation of disturbances of the parathyroids to tetany, careful studies were made of these bodies. These gave no evidence that they were diseased in their structure.

The suggestion arises whether or not their functioning may have been interfered with by the pathological conditions that were found in the pituitary gland. In both cases the pituitary glands showed a degree of cystic change that was unusual. While small cysts of the pituitary body are not infrequent occurrences, the size and number of the cysts in the present cases were of a degree definitely pathological. This was particularly true of the gland in Case I, and in Case II the gland as a whole was larger than normal and the number of cysts was unusual.

That the pituitary body may have a relation to tetany has been previously suggested by other workers. In two contributions by Ott and Scott (63, 65) attention is directed to this interrelation from experimental evidence. Thus, the pituitary gland becomes enlarged, after removal of the thyroid, *i. e.*, the parathyroids. They cite the study of Pogowitch who found alterations in the structure of the pituitary of dogs and rabbits after complete thyroidectomy. A more specific relation is shown by pharmacological experiment. Thus, cats that have tetany following the removal of the parathyroids are alleviated by the administration of the extracts of the pituitary body. A case has been reported by Pal (63) in which some tetany spasms in a boy ceased after 24 hours when given pituitrin. This interrelation is supported by an

observation of Herring (66) who found that in dogs who had their parathyroids removed, there occurred accumulations of numerous granular hyaline or colloid bodies in the nervous portion of the pituitary gland.

The suggestion arises that in the two cases of this report the cystic condition of the pituitary gland may have been part of a pathological process that in affecting the pituitary gland also produced some disturbance of the functioning of the parathyroids; and by this there resulted a disorder of metabolism which caused a central disorder of the nervous system producing both tetany and the psychosis.

Some comment has been made in the literature on the time relations that the appearance of the psychosis bears to the tetany attacks. In the majority of the cases associated with gastric tetany the psychotic features only developed shortly before death. In other cases, the psychoses appeared at various periods after the tetany had become manifest. Usually it has developed as the tetany symptoms increased in severity. In our own cases, in Case I, the psychosis was in evidence long before the tetany appeared, and in Case II the symptoms of tetany had been present at various times for a long period before psychic disturbances occurred.

It would seem as one analysis the cases of this report and those elsewhere in the literature that we are not concerned with a specific tetany psychosis, but that the neuro-muscular disturbances and the psychosis are both the result of a toxic process affecting the central nervous system. In the two cases of this report this disturbance seems to have had some relationship to disease of the pituitary body.

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THE NATURE OF THE SUBSTANCE CAUSING THE COLLOIDAL GOLD REACTION.*

By PAUL G. WESTON, WARREN, PENNA.

Since the introduction of the colloidal gold test by Lange,¹ many papers on the subject have been published. Most of these dealt with the value of the test in the diagnosis of neurosyphilis and compared the results of the reaction with the Wassermann test, globulin content and cell count in the spinal fluid. Many observers commented on the nature of the reaction and a few studied the spinal fluid with a view to determining the substance which caused it. In 1914 Matzkiewitsch² reported that colloidal gold was a delicate reagent for the detection of minimal quantities of peptone and stated that he dialyzed $2\frac{1}{2}$ c. c. of spinal fluid from cases of paresis against 20 c. c. of sterilized, distilled water, using thimbles impermeable to albumin but permeable equally to peptone and found that the dialysate gave a strongly positive ninhydrin and gold sol reaction. From this one is led to infer that the gold precipitating substance in the spinal fluid from paretics is peptone. Miller, Brush, Hammers and Felton³ observed that the substance causing the precipitation of gold from colloidal suspension was at least partially dialyzable. Weston⁴ repeated the work of Matzkiewitsch and found that colloidal gold was remote from being a delicate reagent for the detection of minimal quantities of peptone and he was not able to obtain a ninhydrin reaction or paretic gold curve with any of the fifteen fluids from the paretics, which he examined. Fluids from non-paretics (other psychoses) gave no reaction with colloidal gold. He attempted to determine the nature of the gold precipitating substance by the following methods:

Ten cubic centimeters of spinal fluid from a paretic were evaporated in a porcelain crucible and ashed. The salts were taken up with 10 c. c. of freshly distilled, sterilized water and the solution tested with colloidal gold in the usual way. No

* Read at the seventy-fifth annual meeting of The American Medico-Psychological Association, Philadelphia, Pa., June 18-20, 1910.

change of color occurred in the gold suspension. The salts were not the precipitating agent.

Two cubic centimeters of the same spinal fluid were boiled for two minutes in a test tube; the water lost by evaporation was replaced; the fluid was cooled and filtered through lead free glass wool. Glucose was present in the filtrate as determined by the picramic acid and copper sulphate tests. Addition of this fluid to colloidal gold in the quantities used in Lange's test caused no visible change in the color of the gold. The glucose was, therefore, not the precipitating agent. This experiment also ruled out peptone as a possible cause of the gold reaction. It followed that precipitating substance was destroyed by heat and was probably of a protein nature.

Spinal fluids from paretics were dialyzed through parchment paper thimbles, impermeable to albumin but permeable equally to peptone, against freshly distilled water for 24 hours at 37° C., the fluid and water being covered with toluol. The dialysate contained a substance which gave a precipitate with a saturated solution of ammonium sulphate, and which precipitated colloidal gold. No complement deviating bodies were present.

Felton* studied the effect of albumin and globulin on colloidal gold. The globulins were prepared by dialyzing spinal fluids in collodion sacs against distilled water at 42-44° C. Dialysis was continued until precipitation occurred and the time ranged from 10 to 100 hours. The water was changed every ten hours. After precipitation had occurred, the contents of the dialyzing sac were emptied into a centrifuge tube and the material centrifugalized. The precipitate was washed with distilled water and then dissolved in .85 per cent sodium chloride solution and made alkaline to P_{H} of 7.56 with sodium carbonate. These globulin solutions were tested with colloidal gold and the interesting observation was made that each globulin, regardless of its source, gave a typical paretic zone reaction. And also, the Wassermann reaction remained positive in the globulins prepared from syphilitic fluids, while negative globulins continued to produce negative Wassermann reactions. Felton found it necessary, however, to use approximately 10 times more globulin to produce a paretic curve, than is ordinarily present in a paretic spinal fluid. He found that albumin protected the gold from precipitation by the globulin

solutions, and by carefully regulating the proportions of albumin and globulin, paretic, luetic or meningitic curves could be produced at will. It is this varying proportion of albumin and globulin in the spinal fluid that accounts for the different zone reactions.

I have repeated my earlier experiments with the view of trying to separate the gold precipitating from the Wassermann reacting substance. Mixed fluids from three paretics were used. 5 c. c. were placed in each of three parchment paper dialyzing thimbles which were impervious to serum albumin when tested in the usual way. The thimbles were immersed in one liter Florence flasks made of Pyrex glass which were filled with freshly distilled water to within 10 cm. of the top. The level of the fluid in the thimbles was the same as that of the water in the flasks. Each thimble was suspended from the neck of the flask by three threads. A layer of toluol was placed over the fluid and water, and the flask closed with a cotton stopper. Three test tubes having about the same diameter as the thimbles, and each containing 5 c. c. of the same spinal fluid covered with toluol, were immersed in jars of water and placed on the table alongside the flasks containing the thimbles. It was found that while the toluol did not interfere with the gold reaction, enough of it was absorbed by the fluid to cause hemolysis of the corpuscles used in the Wassermann reaction. The fluids were then set up under aseptic conditions and no preservative was added. The flasks were closed with sterilized rubber stoppers and dialysis was carried on at room temperature.

A Wassermann and gold reaction were made with the fluid before it was placed in the thimbles, and the smallest amount which would cause complete inhibition of hemolysis in the former reaction was determined. This was found to be $\frac{2}{10}$ c. c. After 12 hours, fluid from the thimble and some of the fluid from the test tube kept immersed in the jar of water alongside the dialyzing tube, were tested for the gold and Wassermann reactions. The fluid was first stirred well in the thimble with a glass rod and 1 c. c. was added to an equal amount of $\frac{4}{10}$ per cent sodium chloride solution. The precipitated globulin dissolved at once. It was found that the Wassermann dose for each fluid was the same, $\frac{2}{10}$ c. c., but that the gold curve, with the fluid from the thimble, did not show a color change greater than four. 24 hours later the experiment was repeated and the gold reaction, with fluid from the

thimble, was not greater than one. The dose of fluid for the Wassermann reaction remained the same as that of the fresh fluid, $\frac{2}{10}$ c. c. The water in which dialysis had taken place was evaporated by a current of air from an electric fan to a quantity equal to that of the fluid taken for dialysis, 5 c. c. The Wassermann reaction was absolutely negative with this fluid, but the gold reaction was almost the same as that with the fresh fluid, as shown in the accompanying table. The slight difference between the reaction shown by the gold with the fresh fluid and that with the dialysate could easily be explained by the necessary loss in evaporating a large amount of fluid in a shallow dish.

TABLE.

	Thimble fluid before dialysis.	Test tube fluid before dialysis.	Thimble fluid after 12 hours dialysis.	Test tube fluid after 12 hours.	Thimble fluid after 36 hours dialysis.	Test tube fluid after 36 hours.	Dialysate evaporated to original volume of fluid.
Wassermann.....	++++	++++	++++	++++	++++	++++	—
Gold curve.....	5555553100	5555553100	4443321000	5555553100	1111000000	5555553100	55555521000

From the above data, it follows that the gold precipitating substance and the Wassermann reacting substance are different and can be separated from each other quantitatively. It also explains why one may have a reaction in the paretic zone with a spinal fluid which gives either a positive or a negative Wassermann reaction.

SUMMARY.

The colloidal gold precipitating substance in the spinal fluid of paretics is a globulin. It is not the Wassermann reacting substance and can be separated from the latter quantitatively. This explains why one may have a paretic curve in the gold test with either a positive or negative Wassermann reaction.

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ANTICIPATION OF PARESIS AND TABES IN SYPHILITICS.*

BY SANGER BROWN, KENILWORTH, ILL.

Since tabes and paresis have been shown to be simply late manifestations of syphilis it would be idle to recount the numerous theories of their etiology which were advanced prior to the establishment of this fact. There remain, however, some important questions to be investigated relative to the conditions under which these diseases develop, and in the light of what they have already accomplished it is to be hoped that methods of investigation in which the test tube and microscope figure prominently may supply the desired answers, long before the plan, the outlines of which I am about to suggest, could even under the most favorable circumstances be brought to completion; yet in the event that such a hope might be disappointed the importance of gaining a full understanding of syphilis, and especially of these particular manifestations of it, is so great that I proceed with my purpose under a considerable sense of justification.

Among the questions demanding an answer are the following:

What percentage of cases of syphilis subsequently develop tabes or paresis?

How is liability to these diseases influenced by treatment?

Of what value are the antigen tests as affording an index of liability?

Are those cases in which the Wassermann remains positive in spite of treatment more liable than others?

Is liability influenced by any infection other than syphilis?

Owing possibly to some anatomical peculiarity rendering the central nervous system easily accessible to the spirochete, might not liability be increased?

* Read at the seventy-fifth annual meeting of The American Medico-Psychological Association, Philadelphia, Pa., June 18-20, 1919.

If well-kept histories covering the entire lifetime of many hundreds of patients were available it might be possible to draw information from them which, even if it did not supply definite and conclusive answers to all questions at issue, would certainly shed more or less valuable light upon the subject, not otherwise obtainable. Differences of opinion, not to say acrimonious discussion regarding the efficacy of various forms of treatment, might be expected to disappear, and patients might thus find immunity from the dangers of disastrous experiment. Among many similar examples let us recall in this connection with becoming humility the numerous lives that were sacrificed by the employment of blood-letting and aconite in the treatment of pneumonia through ignorance of the natural history of that disease. Investigation of the subject of syphilis presents some different aspects from those encountered in the study of cancer and tuberculosis for instance. In these last named diseases the course is such that adequate histories may be obtained by individual observers, and furthermore the important element of secrecy does not have to be reckoned with. Material for fruitful discussion is readily procured and hence reliable and positive conclusions have promptly appeared.

In a large majority of cases of syphilis immediately following infection the patient regains his usual health and passes from medical observation, at least so far as concerns syphilis, so that in civil practice a sufficient number of complete histories from which sound conclusions might be drawn cannot be made by the efforts of independent observers, no matter what their abilities or opportunities may be; this can only be obtained by the concerted action of physicians extending over a period of two or more generations. The first step for our concerted action lies, therefore, in the direction of collecting sufficient reliable data for analysis and discussion. This is certainly a stupendous undertaking, and naturally when we contemplate the effort involved we shrink from it. It offers no immediate outlet for the exercise of eloquence or elocution and some of us rather than embark on such an enterprise might prefer to go on wrangling over ingenious and more or less plausible theories supported by clinical testimony necessarily incomplete and therefore rendering the deductions therefrom more or less inconclusive and unconvincing.

With a view of accumulating the desired histories I venture to offer the following suggestions:

1. A committee embracing representatives of the various branches of medical science should be formed to elaborate and submit or perhaps execute plans for the achievement of the end in view. Among the subjects which should engage the activities of such a committee might be mentioned:

2. Securing sufficient financial support; for without the assurance of this it would be idle to proceed. A bureau would have to be established from the first to carry on correspondence and disseminate literature essential to successful prosecution of the several features of such plans as might be adopted. This would involve the permanent employment of a qualified executive with appropriate quarters and assistants.

3. Preparation for a prospectus and propaganda to aid in the formation of a league of physicians, whose members would undertake to supply the necessary histories.

4. Devising a scheme for history taking with reference to scope, uniformity and conciseness, and for analysis and classification of histories, and also providing for continuity of observation when the patient might change his residence.

5. And finally contrive measures for securing and maintaining the interest and cooperation of the patient, and convincing him that nothing would be required of him that might in any way compromise his right of privacy.

Next to obtaining a guarantee of adequate financial aid, this last proposition presents, in my opinion, the most formidable obstacle to be encountered in the successful prosecution of the work. Propaganda carried on by the publication of properly prepared articles in newspapers and lay periodicals would seem highly desirable as a means of exciting public interest and indeed, when we consider *Collier's* campaign against medical frauds and fakes, and the highly commendable effort of the *Chicago Daily Tribune* to extend sound and appropriate medical education to the public, it does not seem unreasonable to hope that reputable periodicals of wide circulation might engage to lend active support to the project.

In the composition of the original committee the importance of obtaining the friendly attitude and so far as necessary the

active support of the entire medical profession should be duly recognized; but especially should the interest of the general practitioner be secured, since in a large majority of cases the patient applies to him for treatment of the initial infection, hence he is on the spot at the most favorable psychological moment for impressing upon the mind of the sufferer the importance of remaining under competent medical observation during the remainder of his life.

In order that the physician may be able to gain the patient's earnest cooperation and also that he may be able to efficiently administer the several methods of treatment which may be prescribed, a sound knowledge of existing facts relating to syphilis is essential. I have been assured by those in a position to qualify them to form an opinion on the subject that the profession in general is greatly in need of instruction regarding the facts specified; then, assuming the soundness of this view, appropriate educational propaganda should be directed to the general practitioner to qualify him for the required service. The most feasible medium of disseminating the necessary education is through a widely circulating medical journal.

Hence it seems to me only logical to conclude that since the purpose of the proposed scheme is to mitigate, if not happily to arrest perhaps, the most horrible scourge that afflicts humanity; and since cooperation of the whole of the ethical medical profession, the services of a widely circulating medical journal, and the expenditure of considerable funds are essential to its success, the work should be conducted under the auspices of the American Medical Association, supported financially by some qualified philanthropic foundation.

When the dimensions of its ethical membership, the high character and wide circulation of its journal, and the services it is rendering the public and the profession are understood, it seems certain that the A. M. A. has fully met, if indeed it has not surpassed, the hopes and expectations of its founders. However, since the organization fulfills in an especial manner the conditions necessary for conducting such an investigation as that herein suggested, providing proper financial support were assured, its officers might favorably entertain a proposition to extend its

activities along the lines indicated. So far as obtaining necessary funds is concerned, without specifying them it may be safely asserted that no other disease presents so many and strong features, both economic and moral, to attract philanthropic sentiment as those exhibited by syphilis.

What I have said is not intended to be anything more than an introduction to the subject. I am well aware of the magnitude of the proposed work, but entertain strong convictions as to its possible value, and I submit the matter to our association, hoping that this or some better plan may be adopted which will extend and define our knowledge of syphilis in the directions I have indicated.

Large standing armies and navies present peculiarly favorable conditions for the prosecution of investigations along the lines I have indicated and a highly valuable contribution was published a few years ago by Pilez and Mattuschek based on histories of over 4000 infected officers in the Austrian Army. The completed histories covered periods ranging from 22 to 32 years and were terminated in 1912. Parenthetically I may say that within 22 years from the date of infection 4.67 per cent had developed paresis. However, while a permanently military organization presents certain advantages over the plan I have outlined, for attaining directly the desired scientific results, the educational features of the latter strongly recommend its adoption. The suggested bureau should of course encourage all legitimate effort intended to advance its purposes. Indeed, it is quite conceivable that such a bureau, under the direction of the organized medical profession, might become a potent factor in mitigating the misery incident to the ravages of various forms of disease.

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THYMIC REACTIONS IN THE DIFFERENTIATION OF NEUROTIC FROM PSYCHOTIC CONDITIONS.*

By DONALD GREGG, M. D., WELLESLEY, MASS.

To the ancient Greek the thymus was the seat of vehement passions and desires. To-day many derivatives of this word are in use and it seems not incorrect to speak of "thymic reactions" as reactions of emotional origin without arousing confusion as to the involvement of the thymus gland. To those who have followed the work and writings of McDougal, Cannon and many others it is unnecessary to state that the reactions of the body to emotional stimuli have been studied with diligence and skill. These reactions take place through the sympathetic or vegetative nervous system and involve primarily the unstriated musculature, and the glands of internal secretion. Such reactions have to do with the activities of the heart, stomach, intestines, kidneys, bladder, sweat glands, supra renals, thyroid, etc.

Perhaps the strongest instinct of man is that of self-preservation, and the most common emotion, one which is closely associated with this instinct—namely, fear. It is but natural then that in studying nervous and mental cases we should constantly be called upon to consider the effect of fear, and the reaction of man to this emotion. Psychologists maintain that the common and instinctive reactions to fear are fight or flight, and physiologists have shown that the reaction of the body to fear is such as to prepare the body for fight or flight. Of course, the complications of civilized life have camouflaged matters greatly, but when the camouflage is stripped away the general structure of human activities remains the same.

Given an emotional stimulus that reaches home, so to speak, we expect an individual to react along one of three lines: First, normally, *i. e.*, to a degree that is seemingly commensurate with the intensity of the stimulus. Or second, excessively, *i. e.*, to a

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degree beyond what such a stimulus usually evokes. Or third, to a diminished degree or not at all.

We recognize three similar lines of reaction in testing for common bodily reflexes. For example, in testing the knee-jerk we get a reaction that we consider normal. Or again one that is excessive, or thirdly one that is difficult to elicit or perhaps absent. The first we pass without remark, the second and third demand attention. Perhaps the commonest condition associated with an increased knee-jerk is that of the "nervous" or highstrung individual, or the ordinarily normal individual when somewhat fatigued. Of course we must not forget distinct pathological conditions that also accentuate the patellar reflex. When we find the knee-jerk diminished or absent we naturally look for other signs of a destructive process, such as tabes or general paresis, although we must not overlook the fact that the reaction can be inhibited from causes that are not destructive processes.

Physiologists tell us that living tissue when stimulated may at first react normally, later as fatigue commences, excessively, and finally as exhaustion or death comes, that it ceases to react.

With this concept in mind let us consider nervous and mental conditions: neuroses and psychoses. We differentiate these conditions in our classifications and statistics, but when we come to draw a sharp dividing line, the situation is as complex as that which confronts the Peace Conference in Paris as it tries to draw new national boundaries.

Schwab in a recent article on the War Neuroses says that "neuroses are defensive mechanisms demanding always as their first requisites a consciousness that can act in a normal manner." But "That in the psychoses there is a want of a primary and logical purpose. A psychosis in the long run always acts to the disadvantage of the individual, both in relation to his immediate environment and to society. . . . Sooner or later a psychosis brings the individual in conflict with himself, his class and society." In other words, a psychotic individual is a facultative menace to himself and society and the earlier his condition can be recognized the better.

We heard yesterday of the cruelties that have resulted from the crude rule of the navy which groups cases as "mental—

violent" and "mental—not violent." Surely any attempt to clarify the situation is worthy of consideration.

Suppose that we consider the thesis, that the neuroses are characterized by excessive reactions through the sympathetic or vegetative nervous systems to emotional stimuli and that the psychoses are characterized by diminished or absent reactions along these lines to such stimuli. Such a thesis does not have to do with the etiology of any of the neuroses, nor of any of the psychoses, nor does it imply that a given case must be purely neurotic or purely psychotic. And perhaps it will be objected that such a thesis considers only the emotional field of mental activity and neglects the intellect and will. But action, especially instinctive action, is associated most commonly with the emotions, rather than the intellect or will, and it is because of the actions of an individual that treatment is called for.

That neurotic individuals react excessively to emotional stimuli hardly needs demonstration. Any one who has dealt with a neurasthenic or hysteric or psychasthenic has probably struggled to shield such an individual from emotional stimuli and help him to react less strenuously to such stimuli.

But what about the psychotic cases? Considering the classification proposed by Dr. Southard we have first the syphilopsychoses. In syphilitic conditions there are neurotic states similar to neurasthenia, when an individual is excessively worried, sleeps poorly, loses weight, is hypersensitive, introspective, etc. But with the onset of a psychosis such an individual often ceases to have fatigue symptoms. He is excessively energetic and able to accomplish more than ever before, perhaps. When a lumbar puncture is done the neurotic will often complain of great pain, headache and nausea, but the paretic has little or no reaction—in fact, often thinks the procedure good treatment.

With the hypophrenoses, or feeble-minded, the question arises whether the emotional stimulus reaches home, so to speak. Certainly, however, clinical evidence is abundant that the feeble-minded individual fails to react as expected. Nor are such failures, failures involving merely intellectual defectiveness. Indiscretions in diet produce little or no result. I remember seeing at the Boston Psychopathic Hospital in Boston an out

patient who was so calm, placid and healthy looking after five or six major operations of doing and undoing, loosening and tightening a gastroenterostomy that I referred him for a Binet test, and got the report that he was but eight years old in intelligence.

In the epileptoses the mental condition varies so much as to render conclusions difficult.

In the pharmatopsychoses we have the alcoholics. The delirium tremens case reacts with physical signs: tremor, loss of sleep, active pulse, poor appetite, etc. The alcoholic hallucinosis case sits calmly with quiet pulse and good appetite while hearing insulting voices. The lead psychotic seldom has the "dry belly-ache" of the simple case of plumbism.

The encephalopsychoses often are classed as neurasthenic at first, and later as the process is more advanced as psychotic.

The somatopsychoses are mentioned in the text-books of general medicine as complications of typhoid, cardiorenal disease, etc., but little or no information is given to help in recognizing such complications. But when a typhoid case becomes keen-eyed, alert, regardless of his natural physical weakness, there is often trouble ahead. The astounding strength and endurance of the senile case is too well known for comment. How often an old man or woman seemingly about to depart, on the development of a psychosis, takes a new lease on life and lives on for years!

Perhaps in the schizophrenoses, the mechanism is somewhat different. Here the paths of intake may be clear while the outgoing paths are blocked. But the reaction as readily noted is seemingly diminished or absent. I have seen dementia præcox cases after deep etherization show no nausea or physical inconvenience. The walking hardware collections occasionally found in institutions show little somatic reaction. I recently saw a case that had attempted suicide that was so slightly upset that I could not understand the situation until an elaborate paranoid system of persecution became evident.

In the cyclothymoses, especially the manic cases, it may seem that there is certainly no diminution of reaction. But with tube-feeding some of these cases will gain in weight. In fact, a gain in weight without improvement in mental condition is considered

a bad sign, clinically. And although we strive to keep our manic cases clothed we are surprised to note how immune these cases are to exposure which certainly would more than inconvenience a sane individual. Moreover, how little they show evidence of fatigue in spite of little sleep and excessive activity.

Among the psychoneuroses and psychopathic personalities we have individuals of so-called psychotic stock. Does this mean that this stock is labile in its emotional reactivity—that the link between the emotions and the physiological reaction to them is slight and liable to rupture—a loose jointedness, so to speak, that in some members of a family results in mental disease and in other members an ability to disregard obstacles—hunger, sleep, clothing, social position—and push on to the success of a genius? Is this the relationship between mental disease and genius so often discussed?

But of what value is such a thesis? Clarity of thought in distinguishing neuroses from psychoses should improve our skill in diagnosis. If we can distinguish the neurotic from the psychotic we are less likely to maltreat the neurotic and at the same time we are able sooner to protect the psychotic from himself and safeguard the community. When an individual fails to react to emotional stimuli his steering mechanism is out of gear, and his conduct cannot be predicted with certainty or with safety to himself or the community.

But if no psychotic symptoms exist, assurance of the neurotic individual and a clear explanation of his condition are most potent means of helping him to answer the ever ready question, "Am I losing my mind?"

There is nothing new about this thesis. We have utilized a similar viewpoint in detecting the malingerer. It merely suggests that when an individual's instinctive reactions are in abeyance, his condition is usually far more serious than when these reactions are functioning.

THE CLASSIFICATION OF INDUSTRIAL APPLICANTS.*

By A. W. STEARNS, M.D.,
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During the past few years considerable interest has been shown in the analysis of the personnel of industrial and commercial houses. Different groups of men have done two types of work on this problem; one type, which may be called the psychological, has confined itself largely to experimenting with tests for special ability; the other, the employment managers, with general statistics concerning labor turnover, industrial accidents, etc. Doctors have also contributed considerable literature to the medical aspects of industry. A decided impetus has been given this work by the success of group tests as applied in the United States Army.

The writer was engaged in psychiatric work in the United States Navy for nearly two years and this paper is a discussion of the industrial problem based upon naval experience.

Obviously the mental health and capacity of industrial applicants are of fundamental importance, and some method of determining these factors should be adopted by every employer of labor. There are two somewhat different phases of this work: First, the detection of the unfit; 2d, the classification of the fit. These will be discussed separately.

THE DETECTION OF THE UNFIT.

Several methods of detecting the unfit are now in use, but none of them adequately meet the need. Application blanks, however extended, do not serve the purpose, for the responsibility of accurate determination of the man's ability is left with the man himself. Undesirables cannot be trusted to report their own

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deficiencies. Present medical examinations ignore the mental factor. Psychological tests do not cover the field, for they detect only the feeble-minded, penalize the foreign born and illiterate, and pass undetected many social problems most important to know. The interview is, in the belief of the writer, the only rational means of detecting this group. However, it seems necessary that the interviewer should use some of the special knowledge and skill which has been developed by more intensive psychiatric work. It is, of course, unnecessary to give every applicant a thorough mental examination. It is necessary to seriously consider the mentality of every applicant. This does not come out in the course of an interview, the object of which is to consider other factors. One may spend a day with a friend and be unable to describe his tie, so an extended interview may not bring out mental defect, epilepsy or psychoneurosis, unless the interviewer covers certain ground, knows the social significance of certain things and allots a certain portion of the interview to the determination of mental factors.

The technique of the interview is very important. Interviewer and applicant should be alone. The attitude and manner of the interviewer should be such as to create a feeling of confidence and friendliness on the part of the applicant. Many interviewers get to be "martinets" and handle their subjects with arrogance and roughness. It is absolutely necessary that he suppress his ego, difficult though this may be. Time is not essential; a bond of sympathy may be established in a moment and this bond of sympathy will bring out the truth as no amount of shrewdness can. Experience in many thousands of interviews with naval recruits with necessary haste resulted in seeking information under five headings. This gave a standardized interview which could be completed in one minute, if necessary, and which is really a combination of history and examination.

Appearance.—Knowledge of the most fundamental nature is gained from the appearance, attitude and manner of an individual, provided the interviewer views the matter or the subject dispassionately and without prejudice, and does not jump at conclusions. Anything unusual must be detected and investigated. If the man be dirty or shabbily clothed, the interviewer must regard this as a clue and seek the cause. It may be vagrancy or merely unavoid-

able. The emotional tone should be observed, and undue depression anxiety or exilaration noted. The dullness of the imbecile, the apathy of the dementia præcox case, the various motor phenomena seen in disease and candidness or furtiveness should be noted. The tremors of alcoholics, syphilitics and seniles are characteristic. Above all, the general type of the man should be observed. These things are not of differential value, but are suggestive.

Geographical Factor.—The vast majority of industrially stable persons tends to remain in the same locality and have a definite home. Also misfits tend to roam, so the place of birth, the various places of residence and the relation between the home and the place of application are of special importance in detecting transients, rolling stones and incompetents, whether they have mental diseases or not.

Formal Education.—In determining the weight to attach to formal education one must have in mind local customs. Less than the eighth grade in New England is suggestive, while in some other states educational standards are lower. Attendance at college or high school means a good deal, and having graduated from the eighth grade usually weeds out feeble-mindedness and congenital cases. Great instability usually shows up before the eighth grade has been completed and prevents progress in school.

Occupation.—The sort of work which a man has been doing and the progress which he has made are very important in estimating his capacity and stability, as well as the kind of work which he has learned to do. The importance of this varies with age. A man with a good job held for a term of years is not apt to have nervous or mental disease, or peculiarity. Any young man who has worked a year or more at one job has shown a certain amount of stability. Defectives and mentally handicapped tend to change jobs frequently and to get into different sorts of unskilled labor, such as work in hotels, barbershops, stables, saloons, pool halls. Some credit houses refuse to trust any man part of whose income is from tips.

General Health.—Entirely apart from the physical disease, which is detected by physical examination, many psychopaths and psychoneurotics are chronic invalids, complaining of vague aches and pains, stomach and eye trouble, rheumatism, weakness, etc.

Therefore, the general health of the individual should be investigated and clues followed.

None of the above points prove disability, this being merely a scheme of isolating a small group of applicants who need more thorough study than the routine interview. It may be wise to employ the handicapped, but their handicap should be known in justice to employer and employee. By means of this standardized interview about 10 per cent will show something which makes it seem wise to study the case further. This 10 per cent will contain the 2 to 5 per cent who are unfit. This 2 to 5 per cent will be responsible for accidents, thefts and turnover entirely out of proportion to their number.

THE CLASSIFICATION OF THE FIT.

There can be no question as to the need of a more scientific method of classifying employees than the past rule of thumb. Executives cannot know their men intimately, and so are entirely dependent upon the opinions of subordinates. This judgment is entirely personal, and is good or bad according to a personal opinion, which oftentimes represents merely like or dislike, and is often given with inadequate knowledge. At present no claim can be made for a complete personality study, but a start has been made. The methods used by the army are sound so far as they go, and impersonal. In classifying naval recruits an attempt was made to deal only in fundamentals which could be ascertained, and with simplicity as well as utility in mind, four things were chosen as of primary importance:

1. *Physical Condition*.—This field is now covered more or less adequately, and need not be discussed by a psychiatrist.

2. *Mental Capacity*.—If time enough were available, each applicant would probably find his level, but the "trial and failure" method is neither efficient nor economical, provided some other can be devised. Recommendations cannot be trusted, and the guess of an interviewer is a shot in the dark. Educational classifications are not enough. It is probable that psychological tests, imperfect though they may be, offer the best method of forming a general estimate of a man's capacity.

3. *Formal Education*.—Although the amount of formal education received is not a fair index of a man's possibilities, it does help toward forming an estimate of his worth:

- (a) Because of mental training.
- (b) Because of accumulated knowledge.
- (c) Because of the tendency of the better minds to acquire formal education.

4. *Industrial Training*.—This is of value for two distinct reasons: first, because of a need of specially trained men; second, because it is useful in estimating the capacity and stability of the individual, as shown by duration of employment and quality of work done.

MENTAL CLASSIFICATION.

The accuracy with which a man's mental capacity can be estimated by psychological tests has not been finally determined. Opinions vary from that which says life itself is the only test to the one which presumes to give final judgment by some pet test. The Binet-Simon Scale has everywhere been accepted as an aid in determining feeble-mindedness, and certain tests have proven of value in educational work. It also seems to be quite generally agreed that there is a high correlation between the score made on mental tests and general capacity. Tests for special ability have probably not been so successful. The use of a scale to be given to groups has recently been made a part of the army routine and the psychological department was engaged in grading every soldier. Neither the scale nor its results are available for general use. The navy problem is somewhat different from that of the army because of the almost entire lack of illiterate and non-English speaking men. As there is no provision by which specially trained men can be obtained to do testing in the navy, it was necessary to have a scale which can be used by assistants only slightly trained. In choosing individual tests for a series it seemed to the writer that the Trabue Language Scale offered the best already standardized material. After more or less initial experiments, Trabue Scale C was chosen as a nucleus for a series. It has been used exactly as directed in Trabue's book,

"Language Scale Tests." To this have been added four other tests, making the series as follows:

1. Trabue C.
2. Dissected sentences from Binet-Simon Scale.
3. Cancellation test.
4. Memory span for numerals.
5. Healy Code.

As the Trabue was scored on a basis of 20, the others have been standardized to this. Three dissected sentences are given in the second test and credit is given only for perfectly constructed sentences. If one was correct a mark of six has been given, 13 for two and 20 for three. Time of three minutes has been allowed for the three sentences. For the third test a piece of prose containing 42 e's has been used and one minute given for canceling the e's. One has been deducted from 20 for each e missed and if less than 22 were canceled zero has been given. For the fourth test three attempts at 5, 6, 7, and 8 numerals have been given. A credit of five has been made for one correct series making a total of 20. In the fifth the Healy Code, a sentence of 10 letters has been required to be written and credit of two given for each correct letter. Thus a total perfect score will be 100.

These were at first divided into quarters which fell at 57, 75 and 86. For utilitarian purposes these groups were somewhat modified and divided as follows:

- Group No. 1. Below 65, inferior.
- Group No. 2. 65 to 75, low average.
- Group No. 3. 75 to 85, high average.
- Group No. 4. 85 to 100, superior.

It will be seen that the score covers the whole range of intelligence, being easy enough so that the most stupid can get something and difficult enough to tax the most brilliant, there being but two zeros and fourteen 100's in the series of 4000.

The most important questions to be determined were the meaning of the result of this test and its application. Assuredly there is some difference between the man scoring 65 and the man scoring 85. In order to get the relation between the score and the actual capacity of the man all recruits entering several schools were graded. Then as they succeeded or failed, completing the course in the school being considered a success and being dismissed from

the school being considered a failure, this result was correlated with the score. It was soon apparent that there was a tendency to fail on the part of the low men and to succeed on the part of the high. A difficulty encountered was that the schools maintaining a high standard took few low men, while those with a low standard graduated nearly all who entered. However, after some months of trial, results have been obtained which appear to justify the use of the scale.

It was apparent that those below 65 (Group I) were so apt to fail in whatever school they entered that it was wise economy to reject them. For some time no man was admitted to any school with a score below 65, this comprising roughly, the low 30 per cent of the personnel. In some cases where more applications were received than men were needed, this was raised to 75. It appears from experience with this method that it is more accurate and more fair than either a written school examination, an educational requirement or a company commander's recommendation. No claim should be made that it is a method of individual study, but it can be said that, with large groups of men and no time for painstaking individual study, it is a method by which success or failure can be predicted in a large enough percentage of cases to make its use expedient.

EDUCATIONAL CLASSIFICATION.

This is relatively unimportant, and yet is of some value. There is a continual need of college men on account of special studies taken, and there are other things which men of meager education cannot so readily learn to do.

As with mental capacity and industrial training it was desired to put them in four groups: No. 4 was given to college men, this comprising all men who had formal education in excess of four years high school; No. 3 was given to men who had been to high school; No. 2 was given to those who had finished the eighth grade; No. 1 was given to men who had not finished the eighth grade. Thus:

- No. 1. Less than eighth grade.
- No. 2. Eighth grade.
- No. 3. High school.
- No. 4. College.

INDUSTRIAL CLASSIFICATION.

The kind of work which an individual had been doing previous to enlistment was of value for two distinct reasons, as before stated. The vast majority of men are relatively unskilled. Many of those who have special skill are of no particular value for the work to be done. Each occupation in the navy was given a serial number and every man was classified under this serial number if he had worked more than one year at a job. Again four groups were made as follows:

No. 1. Industrial misfits, such as vagrants, criminals or those continually shifting work.

No. 2. Unskilled, such as farmers and students or day laborers.

No. 3. Experienced. Those who, although they have not a trade and so would not be considered trained, have had enough experience at a given occupation to make this possibly worth while.

No. 4. Trained. Embracing highly skilled individuals who have learned a trade or have a profession or business.

CONCLUSION.

From the foregoing it will be seen that each man was graded according to the navy standard on a basis of 1, 2, 3, 4, as follows:

Mentally:

1. Inferior.
2. Low average.
3. High average.
4. Superior.

Educationally:

1. Less than eighth grade.
2. Eighth grade graduate.
3. High school students.
4. College.

Industrially:

1. Misfits or failures.
2. Unskilled.
3. Experienced.
4. Skilled.

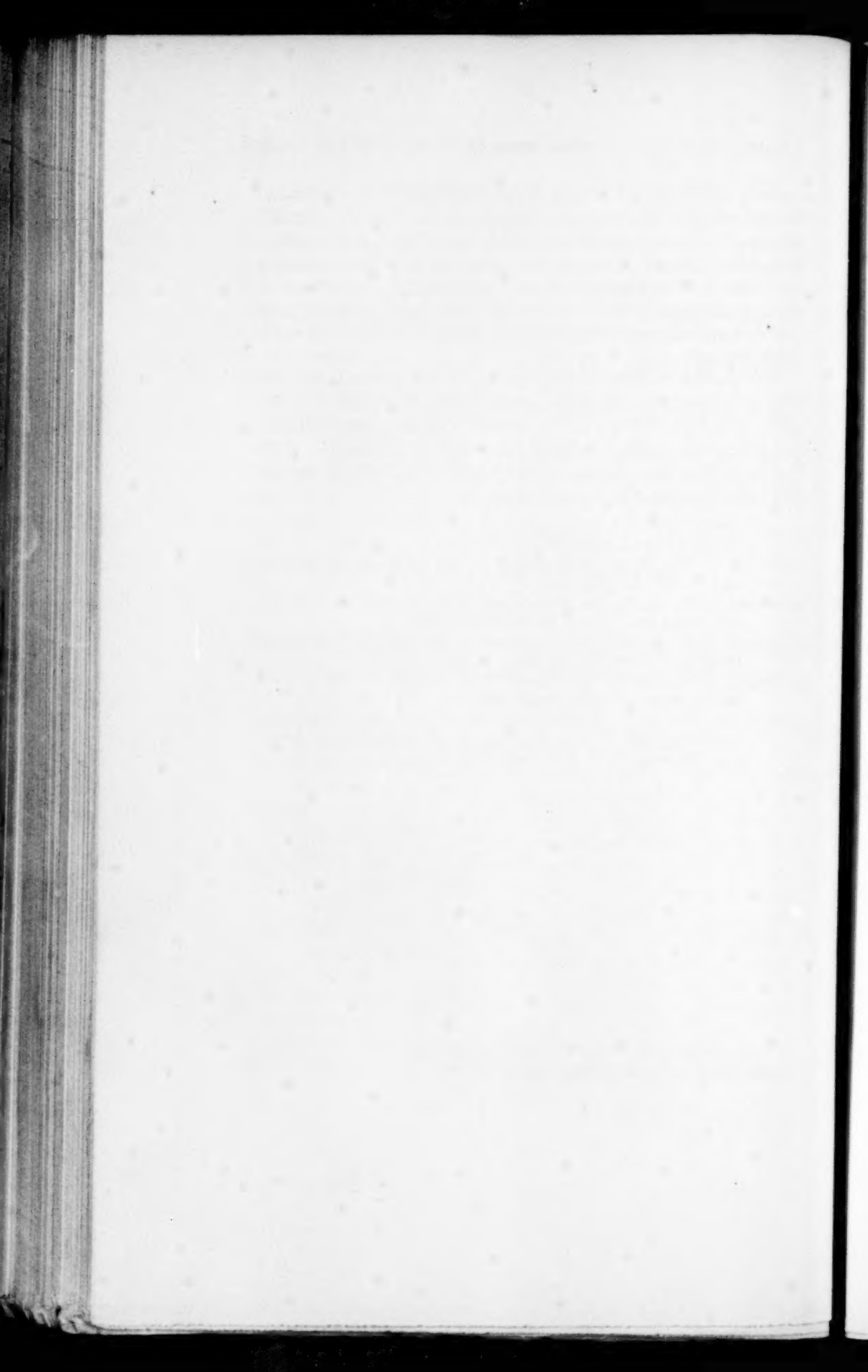
In addition, each occupation was given a serial number from 1 to 53. This made it possible to give every man a numerical

formula representing his capacity and training. The serial number representing his occupation was put at the right of a decimal point as it denotes a qualitative factor, the others being quantitative. For instance, 444.4 would represent a man of superior intelligence, college education and highly skilled, his occupation being an attorney. Also 111.34 would mean inferior intelligence, less than eighth grade education and industrial failure, his work being odd jobs.

This enables a simple index, making it possible to locate and evaluate men easily. Also each number serves as a check upon the other, as a man with a 4 in his formula must be taken seriously, and a 1 means that he should be suspected of incapacity. As a matter of fact the formulas are very consistent, it being rare to find both a 1 and a 4 in the same formula.

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NERVOUS AND MENTAL DISORDERS OF SOLDIERS.*

By SANGER BROWN, 2D, M. D.,

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At this hospital there has been an opportunity to observe nervous and mental symptoms that has probably been unsurpassed in any of the forces engaged in the war. All cases, except those evacuated through England, were grouped for return to the United States at this point. All types, therefore, were encountered, and in numbers quite exceeding those seen in any similar centers in civil life. Numerous unusual conditions were observed. Types were seen which did not conform to those that are so familiar in civil life, and it may be said, particularly in respect to the purely mental cases, that the ordinary disorders of civil life were conspicuous by their comparative infrequency.

Lest any misapprehension should arise, however, as to the frequency of occurrence of nervous and mental symptoms in soldiers, it should be stated as a noteworthy fact that, considered as a whole, the mental attitude of the soldiers of the Expeditionary Forces was to a high degree that of normal and healthy men. Just as one was impressed by their physical vigor and hardiness, so, in general, a healthy and stable mental attitude was observed. This was true of at least 90 per cent of the men.

But it should not be inferred from this assertion that difficult adjustments were not encountered by the men of the army. A nation could not be confronted with all the emotions incident to the greatest war in history without a marked emotional reaction. Then when we consider the intimate association of different nationalities in the United States Army and the sudden alteration in social relationships between men, it is obvious that adjustments of an extreme degree were necessary. In view of the hardships unavoidable in any campaign, the delays in mail and pay, added to

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physical and nervous exhaustion, it takes little imagination to understand the state of mind in which many men found themselves. Incidentally it may be said that nothing could more conclusively prove the unity of purpose of these men and their faith in the right of the cause for which they entered the war than the patience, the fortitude and the determination that they displayed throughout.

To attempt to interpret these mental and nervous manifestations in soldiers in terms of civil-life conceptions would manifestly be ill-advised. Men have been subjected to emotional experiences heretofore unknown. The magnitude of the war itself, shaking as it did the very foundations of institutions and established customs, made a deep impression upon all who came under its influence. It is, therefore, in the sphere of purely mental reactions that the most unusual conditions were found. The nervous states and the neuroses, arising as they did from anxiety and anticipation, at times associated with physical exhaustion, conformed more closely to what is seen in civil life.

As stated above, all nervous and mental cases of the American Expeditionary Forces, with few exceptions, went through this hospital for evacuation to America, and therefore, since it is improbable that before the war these cases have been cared for in such numbers under similar circumstances, a discussion of administrative affairs, such as buildings occupied, personnel engaged and transportation of patients will probably be of interest. A résumé of the clinical material is subsequently given.

ADMINISTRATION OF THE NEURO-PSYCHIATRIC SERVICE.

Until November 6, 1918, the neuro-psychiatric service at Savenay was under the direction of the commanding officer of Base Hospital 8. It functioned separately with a chief of service, medical staff and special personnel. For the first six months comparatively few cases were admitted, from January 1 to June 1, 1918, the admissions being 369. Two wooden barracks of 90 beds each were used during this period. The mess was with other patients. One ward was partitioned off, one end being used for disturbed patients.

After June 1, 1918, the admission rate rapidly increased and additional wards became necessary. Three more wooden barracks

were used as required for this service, providing accommodations for about 500 patients. In the meantime, specially constructed wards designed by the chief surgeon had been erected for this service in a locality some distance from the main hospital. These 11 wards, situated on a slight elevation of ground, consisted of the administration building, a ward for officer patients, a mess hall, a barrack for enlisted personnel and a ward for disturbed patients, the remaining wards being of uniform type, with a large day room, shower baths and running water. This unit was occupied in the latter part of August, 1918. There were accommodations for something less than 200 patients, but by using officers' barracks and enlisted men's barracks, the capacity was expanded to over 250. During this period, however, the barracks connected with Base Hospital 8 were still retained.

In October, 1918, four additional buildings of concrete block were added to the 11 wards above mentioned. When these were completed, the original barracks of Base Hospital 8 were relinquished. No diminution occurred in the admission rate after the cessation of hostilities and therefore the unit as finally constructed proved inadequate. Indeed, in the late fall of 1918, admissions were so rapid that the commanding officer of the center found it necessary to designate wards from two adjacent units *i. e.*, Base Hospital 69 and Base Hospital 113, for the temporary use of the neuro-psychiatric service.

On November 6, 1918, the neuro-psychiatric service was organized as an independent unit, taking over the quarters already occupied. The former chief of service was designated as commanding officer, and Major Joseph Betts became chief of service.

During the latter part of December, evacuations had been so rapid and admissions delayed to such an extent that for a short time there were but 65 patients in the hospital. Admissions, however, soon increased, so that early in January, 1919, the population exceeded 700 patients, including 40 officers. This was quite in excess of the hospital's capacity, especially since, except as a temporary expedient, the use of the wards of adjacent units was not feasible. Under these circumstances the commanding officer of the center gave directions that one of the new 1000-bed units be taken over as a neuro-psychiatric hospital.

In the period during which this organization was being changed from the neuro-psychiatric service of Base Hospital 8 to an independent unit, and during the subsequent transfer of the hospital to its present site, considerable administrative work was necessary. Occasion is taken at this time to state that all the personnel connected with the organization carried out their duties in an exceptionally capable manner. The responsibility of this reorganizing and of the subsequent transfer of the patients and property, as well as the opening and equipping of the new unit, rested particularly with the chief of the service, the quartermaster and the officer in charge of administrative details. These officers, Major Arthur H. Ruggles, Captain Royal C. Cannady and Captain Charles S. Little, performed this work successfully under exceptionally difficult circumstances.

The new unit was occupied January 21, 1919. The construction was not complete and special construction was necessary, this was chiefly by patients. A sitting room was made in one end of the officer's ward and furnished by the Red Cross. A similar sitting room for nurses was arranged in another ward. A staff-conference room was constructed in the officers' barracks. A diet kitchen, furnished by the Red Cross, was installed in the building used for occupational therapy. Four wards were constituted closed wards with screened windows, and in these wards partitions were constructed in such a way as to make patients' day rooms. One ward building was utilized for a Red Cross recreation hut and appropriately furnished.

The large building adjacent to the mess, used in other units for surgery and dressings, was fitted up for a work shop. This work shop was especially well equipped. It had the advantage of the use of material formerly used at Base Hospital 117, consisting of brass work tools, lathes, carpentering sets and an acetylene welding apparatus. Looms for weaving were made by the patients, and woven bags, belts and mats were manufactured. A forge was made by one of the patients. A supply of salvage material for use in the shop was secured from the salvage department at Tours. Six aides, under the direction of Miss Meta Anderson, were engaged in giving instruction. The average number of patients engaged daily was 42. A large amount of material of various kinds was manufactured in this shop. Much of this material, such

as benches, tables, chairs, cabinets and office furnishings, was used to equip the administration buildings and the wards of the unit. In the metal department, rings, trays and other souvenirs were made in great numbers. A considerable amount of material made was taken home by the patients.

PERSONNEL.

Prior to June 1, 1918, the neuro-psychiatric service at Base Hospital 8 was under the direction of Major Charles D. Humes, who had from two to three assistants during this time. Major Humes succeeded in securing the services of nurses and enlisted men with special training in this work. On the 8th of June, 1918, Base Hospital 117 arrived at Savenay from the United States, en route for La Fouché. A part of the personnel, namely, 3 medical officers, 28 nurses and 33 enlisted men remained at Savenay to take charge of the service, Major Humes being relieved and returning to his former station as consultant in neuro-psychiatry at Vittol center.

The organization therefore, after June 8 consisted of 4 medical officers, 28 nurses and 33 enlisted men; 15 of the 28 nurses were on general duty with Base Hospital No. 8. This small service almost at the outset suffered a severe loss by the death of one of its most valuable officers and one who commanded the highest respect of all associated with him. Major Morris J. Karpas, who had joined the unit in Allentown, died suddenly on July 4 of angina pectoris. His loss was deeply mourned not only by the members of the organization, but also by many of the officers and personnel of the hospital center, who had known him either personally or by reputation in civil life.

After June 1, 1918, the admission rate increased rapidly. In June, 256 cases were admitted; in July, 405; in August, 588; in September, 887; in October, 658; in November, 809; in December, 412; in January, 1919, 885; and in February, 824.

The organization received the cases, classified them, afforded appropriate care and treatment and furnished medical officers and personnel to transport them to the United States. Moreover, the trained personnel was sent to convoy patients to Savenay from other centers and organizations. It will be readily seen that demands on the enlisted men were very great, and no praise is

too high for the valuable service rendered both by nurses and enlisted men during this period.

For purposes of classification, all patients were admitted to one large admitting room of 90 beds. A special nursing force was maintained here, and observations for classification were made at once. The organization was most fortunate in having with it Mrs. Janet Cranston, who had experience in charge of the psychopathic department of Bellevue Hospital, New York. Captain John J. Hughes was in charge of the receiving ward, where considerable experience and judgment was necessary to classify these cases properly. All patients, upon admission, were seen by the receiving officer and assigned to proper wards. The acute psychoses, cases of chronic alcoholism and delinquents were sent at once to closed wards. Mild psychoses, epileptics and mental defectives were kept in open wards under supervision. Cases of psychoneuroses were sent to separate wards and, as soon as space was available, to the specially constructed wards mentioned above. These wards were under the charge of Major Henry M. Swift.

By examining and classifying at once every case, administrative difficulties were reduced to a minimum. During this period but two serious accidents occurred, although delinquents of every description came through the service. At the same time patients were given as much liberty as possible, indeed, liberties that in civil life would have been considered impossible. There was no separate mess for many months, patients going to the general mess. The Center Red Cross recreation hut was used by all, and the convalescent patients from the neuro-psychiatric service often contributed very considerably to the entertainments.

The transportation of these cases to America was supervised by this organization to the extent that it furnished medical officers and enlisted personnel. The convoys consisted, as a rule, of from 50 to 200 cases and occasionally more. They went by train to Brest or Saint-Nazaire for embarkation, the patients being loaded in cars especially designated, with acute cases in one special car. The number of attendants sent varied according to the types of patients. The train left the hospital under the charge of a designated medical officer, who exercised supervision until the patients arrived at their destination in the United States. Such convoys drew heavily upon the personnel. This work could not have been carried on had it not been supplemented from the hospital center.

CLINICAL SUMMARY.

A large amount of clinical material passed through this hospital, no less than 6093 cases having been admitted up to March 1, 1919. Observations were necessarily incomplete, and the recording of cases was impossible. The various types, some quite unusual, came under observation with such frequency that they became fairly familiar, and therefore clinical pictures, which otherwise would have been uncertain, became well established. It will be best to discuss the clinical material under headings, as indicated below, the number of each class being likewise stated:

Psychoses	1,916
Psychoneuroses	1,663
Epilepsy	752
Constitutional psychopathic state.....	634
Mental deficiency	524
Organic nervous diseases.....	148

PSYCHOSES.

The number of frank psychoses, amounting in all to 1916 cases, is probably not excessive, considering the forces engaged. Interest in these cases is more in their clinical character than in their numbers. It was soon observed that, in addition to ordinary civil-life types, many unusual cases were encountered. It is true that many cases of dementia præcox, general paresis and other familiar diseases were admitted throughout this period, but they were not the only types seen. Soon after active hostilities began, cases appeared with which the staff were unfamiliar from their civil-life experiences, and in these unusual cases the reactions and the clinical pictures did not conform to any recognized types. It is possible that a number of these unusual cases would have been made more clear by adequate previous histories and longer periods of observation. This, however, was not true of all, and so it is considered that a tentative formulation of these unusual cases should be given at this time. They probably do not form a distinct class from every point of view. They doubtless have a common etiology, however, and they have groups of symptoms in common which are sufficiently striking to warrant their being discussed as a group. Such cases at this hospital have been

referred to as "war psychoses," and so this term is somewhat arbitrarily used.

These cases of so-called war psychoses were observed in considerable numbers. No actual record of their number was kept, but they probably amounted to one-fifth of all the cases diagnosed as psychoses. Many of them improved considerably while at the hospital, and it is quite probable that by the time they reached the United States, the acute symptoms had disappeared. Such clinical descriptions as can be given here, therefore, although incomplete, may be of service in checking up with observations made elsewhere.

The following clinical picture is a composite of what was most frequently observed: Patients on admission were dazed, confused and disoriented, and, as a rule, they were not accessible during the acute period. They generally thought themselves at the front under fire, and were anxious and apprehensive. They wandered about rather aimlessly and showed bewilderment and confusion. Some were quite agitated. Frequently they preferred to be by themselves and volunteered very little in the way of conversation. As a rule, they were depressed, at times profoundly so, to the extent of making suicidal attempts. A few cases were observed in which there was an elevation of mood. The possibility of a manic-depressive condition was considered in these particular instances, but was regarded as improbable. In this general setting of clouding of consciousness, confusion and bewilderment, there were active hallucinations of sight and hearing. Patients complained of seeing shells bursting and of hearing the whistling of shells and bullets. In their highly emotional state it is probable that a part of this was a misinterpretation of noises about the hospital. The symptoms were worse at night, but were by no means confined to the night time. This general condition had some features in common with the psychoneuroses, such as anxiety, fearful dreams and visual hallucinations, but the condition differed in that the patients were inaccessible, disoriented and confused, with marked mood changes and no insight. Not infrequently there were delusional ideas of a transient character and of a changing nature, the content of which had to do with war experiences.

The interpretation of the nature of the conditions above described presents a number of difficulties. In some respects they resembled state of protracted exhaustive delirium. The English have designated these cases as acute confusional psychoses. It is thought, in view of the anxiety, the depression, the character of the hallucinations and the emotional conditions, that emotion and excitement played quite as prominent a part in them as exhaustion. Since patients, as a rule, were inaccessible, no clear idea could be gained as to what they had experienced. It is possible that many of them had been under heavy shell fire, but in what circumstances cannot be stated. It was necessary to return these patients to the United States as soon as their condition warranted transportation. The impression here was that the prognosis was good. The psychosis was considered an acute one, having little in common with ordinary civil-life types, although many cases bore the diagnosis of dementia præcox on their admission tags.

Another small group of cases observed resembled somewhat those above described but differed in a number of respects. Such patients were admitted in a delirious condition. As a rule, they had not been at the front, possibly having but recently landed in France. They were confused, rambling in conversation, inaccessible and restless. They were disoriented and presented the picture of delirium. The thought content was not remarkable. The condition was considered an hysterical delirium, arising in predisposed individuals.

Of the well-known psychoses, such as dementia præcox, manic-depressive psychoses and others, a few features of interest were observed. A number of cases of dementia præcox appeared to have developed since enlistment. Some gave a history of symptoms previous to enlistment and a fair proportion of these had had previous hospital residence. Of the manic-depressive cases there were relatively more with depression than with elation. Both showed a war coloring, especially the depressions, and, in fact, the thought content of many of the self-accusatory and depressed patients had to do solely with war conditions. They frequently had the idea that they were being accused of betraying their country or of being German spies. It is a noteworthy fact that comparatively few acutely maniacal cases were encoun-

tered. Their management was not as difficult as had been anticipated, although several very acute cases were admitted.

PSYCHONEUROSES.

No attempt will be made to discuss in detail the psychoneuroses in this report, not only because this would be beyond the limits of this record, but also because more favorable opportunities were offered at the other neurological hospitals for the observation of these cases. As a rule, when such patients reached this hospital, their symptoms had existed some weeks and even months, and so they presented clinical pictures differing in character and degree from those seen in the advance section. Only observation as to the general character and disposition of these cases as it pertains to this hospital will be made at this time.

It is probable that no cases that came under the care of medical officers were as imperfectly understood at the beginning of hostilities as the psychoneuroses. It is true that full information regarding them had been sent from the chief surgeon's office, and data of great value were likewise available from both French and British sources; nevertheless, the nature of these conditions was unfamiliar to most medical officers, and for this reason a number of weeks elapsed before the plans that had been carefully arranged beforehand for the care of these patients were in satisfactory operation.

During the early period of hostilities, as stated above, the psychoneuroses did not always come under the observation of the officers designated to take care of them. Some of these patients were sent from advance areas directed to base hospitals, where they were admitted to the various wards of the medical or surgical service. The fact that the case was a neurosis and not a physical disease was not always appreciated. They were retained in base hospitals without improvement, and many of them eventually arrived at Savenay for disposition. A number of others were classified by medical boards at base hospitals, sent to training camps when not fully recovered, and, being unfit at these places, were transferred to Savenay.

It can be readily seen that these cases, while relatively few in number, were unfavorable types for early recovery. Fortunately

their number was not great, and in a short time steps were taken by the chief surgeon to have cases sent to their proper destinations and not immediately to base hospitals in the service of supplies. The excellent results, as evidenced by the reports of the work done by the neurological hospitals in the advance areas, indicate the comprehensiveness of the plans as originally constituted. The general management of the psychoneuroses of the war, as demonstrated by the results accomplished, emphasizes the fact that to be successfully treated, such cases must be fully understood. The proper treatment of these conditions has been one of the most difficult problems confronting the physician in civil life. While it is true that they have always been understood by a number of physicians, it must be admitted that, as a rule, too little knowledge of them is gained by students in medical schools, and the fact that they are disorders in the functioning of the mind and not of the body is not always fully appreciated.

During the period of active hostilities, the number of cases of psychoneuroses arriving at this hospital was not relatively large. Two general types were recognized: those resulting from battle experiences and those of ordinary civil-life type, the latter of which had probably existed prior to enlistment. The civil-life types, such as neurasthenia and psychasthenia, as a rule, came under observation soon after arrival in France and never reached the front. A certain portion of these were classified for duty in the service of supplies, and the more severe cases were returned to the United States.

The psychoneuroses arising from battle experiences came from two main sources. At one time a number came from base hospitals or reclassification camps, not having previously had special treatment. It was possible to return a considerable number of these cases to duty, and some were sent to Base Hospital 117. Other cases came from neurological hospitals in the advance section, mainly from Base Hospital 117. Cases arriving from these hospitals were intended for evacuation to the United States, being considered constitutional types with an unfavorable outlook for recovery in the immediate future. After hostilities ceased, arrangements were made by which the psychoneuroses of all sources eventually came to this hospital, and this accounts for their increase in number during the latter months of this report. It was not the

policy after the armistice to classify these cases for limited service, and therefore they were returned to the United States for disposition, the severe cases undergoing a period of treatment here before evacuation.

One feature of the symptomatology observed in this hospital was probably not seen elsewhere. It was found that a number of cases of mental deficiency, epilepsy and mental diseases exhibited war neuroses, such as mutism, tremors or hysterical hemiplegia. This association of symptoms was not infrequent, and these cases presented very unusual clinical pictures as a result.

EPILEPSY.

A comparatively large number of cases were diagnosed as epilepsy, amounting in all to 752. This number of cases afforded ample opportunity to observe the various manifestations of epilepsy, such as major seizures, petit mal and epileptic equivalents. In addition to these well-known manifestations, the constitutional make-up of such patients formed an important part of their disability, and at times was of more significance than the actual seizures. In other words, the seizures themselves, in some cases occurring at rare intervals, might not have been disqualifying, but the neurotic or defective constitution that made up their background rendered these patients unfit as soldiers. The vast majority of these cases were highly neurotic, so much so, indeed, that at times it appeared that the disease should be interpreted as a severe degenerative neurosis, of which the seizure, while the most apparent symptom, was not the most important. Those observers who have favored this interpretation of many cases of epilepsy would see much in the clinical material of this hospital to support their contention.

There were many borderline cases which were thought to belong to this general group. Such cases frequently had slight mental defect and were sluggish in mental reactions. They presented numerous neurasthenic complaints of years' standing. With this condition would occur minor attacks of loss of consciousness, with slight confusion and with occasional frank epileptic seizures. In these cases the mental defect and the constitutional neurotic condition were of more importance than the actual attacks. Many

cases came under observation who had had frank seizures at frequent intervals since childhood. These cases were readily recognized. Numerous types of epileptic equivalents were also encountered. Epilepsy was often associated with alcoholism. Where epileptic seizures occurred on an organic basis, the cases were classified as organic brain disease.

The question of so-called "hystero-epilepsy" arose at times, especially since this diagnosis occasionally appeared on the field card. No great difficulty was experienced in distinguishing the seizures of epilepsy from hysteria. A careful history and clinical observation were all that was necessary, as the hysterical seizures bore only a superficial resemblance to true epilepsy.

THE AMNESIAS.

These cases are discussed at this point because of the relationship of a number of them to epilepsy. A relatively large number of cases were encountered in which patients absented themselves from their organizations for periods varying from several days to several weeks. These patients maintained that they had no memory whatever of what had taken place. They either returned themselves or were picked up by the military police. Such instances occurred in both officers and men. A number of them were frank cases of epilepsy, the period of amnesia occurring either before or after a seizure or being an epileptic equivalent. Many other cases occurred after the excessive use of alcohol. After excluding both epileptic and alcoholic cases, however, many instances of amnesia of the type mentioned above remain to be explained. Such cases are not entirely clear. They were considered by many observers instances of hysterical amnesia, and this interpretation appears the most probable one, thus bringing such cases under the general group of psychoneuroses of the hysterical type. If this view is held, the amnesia could be most readily explained as a mechanism operating subconsciously, in which the individual escaped from a difficult or intolerable situation by wiping out from memory all circumstances associated with it. It is also probable that a number of such cases were conscious delinquencies, but the relative number of the latter type is thought to be comparatively small. All such cases raise court-martial

questions, as the matter of mental responsibility has to be determined.

CONSTITUTIONAL PSYCHOPATHIC STATE.

This group, which included 634 cases, consisted of patients who, while not suffering from frank mental disease, nevertheless were in a mental condition sufficiently abnormal to bring them into serious conflict with those about them. These cases did not differ materially from those seen in civil life, but presented such additional features as might be expected to develop under a military régime. Patients of this kind might make fair progress in civil life, where they could change their occupations and surroundings, but in the military service this was not possible, and they broke down nervously as a result. Indeed, they frequently suffered from temporary mental disorders. In this group were included some cases of alcoholism and drug addiction in whom such states were considered as symptoms in those constitutionally predisposed.

MENTAL DEFICIENCY.

Five hundred and twenty-four cases admitted were diagnosed as mental defectives. This number is not relatively large, and it is probable that many defectives were eliminated before arrival in the American Expeditionary Forces. The classification in respect to duty of these cases, particularly those with the lesser degrees of defect, was a question of considerable importance. It was considered that while defectives, as a rule, could not be used with combat troops, many of them could be serviceable in labor organizations. The disposition, therefore, was to reclassify such cases as were considered fit for duty in rear areas. The record of how these patients had conducted themselves in the military service was considered of greater importance than the testing of their mental age by scale. The emotional constitution of such patients was of considerable importance. A case with mild defect, if irritable and emotional, was often found unfit, while a case with a stable temperament, even with considerable defect, was considered fit for limited service.

In many instances physical defect was found accompanying the mental defect, this physical defect varying in character and

degree, at times being expressed merely by awkwardness in simple movements, at times making itself manifest in the gross, ungainly physical make-up of the mental defective. In still other cases appeared a constitutional physical defect of an ill-defined type. Such patients were stooped, had a narrow, ill-developed chest and often a prominent abdomen. These cases often complained of numerous neurasthenic symptoms. They were related to constitutional neurasthenic types frequently seen in civil life, with mental deficiency added. It was soon found that it was unwise to return these cases to duty of any kind. They went on sick report or in hospital very frequently, and they were more of a liability than an asset.

ORGANIC NERVOUS DISEASES.

This organization did not receive cases with lesions of the central or peripheral nervous system resulting from battle casualties, such cases being received by the surgical service of the center. The other organic nervous cases, amounting in all to 143, were cared for at this hospital. No attempt can be made at this time to describe them in detail. Peripheral neuritis, occurring after diphtheria, influenza or other toxic conditions, was frequently encountered. Evidence of syphilis of the central nervous system was found in more cases than might have been expected, considering the average age of the patients. Several cases were diagnosed as brain tumor. A number of patients presented mental symptoms or epileptiform seizures subsequent to brain injury. Comparatively few cases of paresis or tabes were observed, although other manifestations of syphilis of the central nervous system were not infrequent.

ENCEPHALITIS OF UNDETERMINED TYPE.¹

During January and February, 1919, a number of organic cases of unusual interest were admitted to this hospital. The clinical features of these cases were first recognized by Major A. H. Ruggles, chief of the service at this time. They presented symptoms of such unusual interest that it is thought they should be dis-

¹ Written before access was to be had to literature on this subject.

cussed here, regardless of the fact that the clinical observations could not be completed. This report is, therefore, made tentatively, with the idea that it may be of use in confirming reports of other observers made elsewhere. The following observations made by Major Ruggles are given as nearly as possible in conformity with his characterization of them. In all, there were about one dozen cases of this particular group.

The most striking feature of these cases was that they bore a rather close resemblance to paralysis agitans. They showed a stolid, masklike expression, a tremor suggestive of paralysis agitans, although differing somewhat from it, a shuffling gait and a rigid posture, which suggested rigidity of the muscles of the neck and trunk. These cases also appeared dull mentally, but this was more in appearance, due to lack of expression, than in reality. There was no actual paralysis of the facial muscles, merely a lack of mobility and of expression. One patient could smile but very slightly, and could not laugh. Another had noticed by looking in the mirror that his expression had changed. The head and neck in these cases were held in a stiff and rigid position, but little if any true rigidity was found. The arms were held in semiflexure, both when the patient was walking and sitting. Here, too, however, there was not actual rigidity. The tremor was of a rather coarse type. The hand, as a rule, was held partly closed, but a pill-rolling motion was not observed. As a rule, both sides were involved, but one more than the other. The gait was shuffling and awkward; in fact, all movements were slowly and awkwardly performed. The gait suggested paralysis agitans, but was not entirely characteristic of that disease.

Physical signs indicating disease of the central nervous system, except those described above, were not marked. One case showed a remarkable lateral and rotary nystagmus with exceptionally wide excursions. Otherwise the eye symptoms were negative. There was no actual paralysis of the facial muscles. One case showed considerable tremor of the lips, which made it appear that the patient was about to weep; however, there was no emotional instability. The deep reflexes showed nothing remarkable, except that in some instances the knee-jerks were very active. The superficial reflexes were normal. There was no actual motor weakness, but motor functions were performed awkwardly. No

abnormal sensory symptoms were apparent. The liver showed no evidence of disorder, and other physical findings were negative. Unfortunately, complete serological examinations were impossible. Spinal punctures were done in a few cases. No increase of cells or globulin was found, but punctures were done late in the disease and little definite could be inferred from these negative findings.

While these cases had a fairly close resemblance to one another, sufficient, it was thought, to place them in one group, they did not have that close resemblance throughout which is found in most cases of paralysis agitans. In some the tremor of the hands was the most marked symptom, in others the gait, and in others the lack of facial expression or the rigid posture. All, however, had some of the symptoms enumerated above to a certain extent.

Paralysis agitans is mentioned in connection with these cases for descriptive purposes only, not that they were thought to have any true relationship with that disease. The condition was thought to be encephalitis of unknown origin, the toxic agent showing a selective action, probably for the lenticular nucleus. No etiology could be established. Some cases had had a febrile reaction before admission and had been diagnosed as influenza. Others gave no history of any acute illness. Some of the cases had been confused and delirious at the outset of their illness, previous to their admission here. In favor of interpreting these cases as encephalitis of selective type is the fact that a number of other cases were admitted about this time in which the cranial nerve nuclei of the brain stem were involved. One such case showed first involvement of one seventh nerve. A few days later the other side involved. Both gradually improved and then a slight ptosis of both sides was observed. Later the sixth nerve on one side showed slight involvement, and there was also mental dullness during this period. All serological findings and physical findings were negative in this case. Other similar cases were observed during this time. Both French and British writers have recently described a condition which they term "lethargic encephalitis." This condition may have some relationship to the cases of encephalitis observed here. Cases seen here, however, were not particularly dull or lethargic, and although ptosis occurred, it was not as constant as observed by the French and British writers.

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STATISTICAL TABLES.

TABLE I.—ADMISSIONS AND DISPOSITION OF PATIENTS FROM JANUARY 1, 1918, TO FEBRUARY 1, 1919, INCLUSIVE.

Admissions	6093
Evacuated to U. S. A.....	5191
Returned to duty.....	267
Otherwise disposed of, transferred, etc.....	30
Census, February 28, 1919.....	605

Total disposition of patients..... 6093

TABLE II.—DIAGNOSIS OF CASES ADMITTED.

		Per cent.
Psychoses	1916	31
Psychoneuroses	1663	27
Epilepsy	752	15
Constitutional psychopathic states.....	634	10
Mental Deficiency	527	8
Organic nervous diseases.....	148	2
Otherwise diagnosed	200	3
Awaiting disposition, Feb. 28, 1919.....	263	4

Total 6093

TABLE III.—ADMISSIONS AND EVACUATIONS TO U. S. A. BY MONTHS.

Admitted.		Evacuated to U. S. A.	
January, 1918 ..	} 369	January, 1918 ..	}Not recorded
February, 1918 ..		February, 1918 ..	
March, 1918 ..		March, 1918 ..	
April, 1918		April, 1918 ...	
May, 1918}		May, 1918}	
June, 1918	256	June, 1918 ...}	
July, 1918	405	July, 1918	217
August, 1918	588	August, 1918	455
September, 1918	887	September, 1918	839
October, 1918	658	October, 1918	695
November, 1918	809	November, 1918	801
December, 1918	412	December, 1918	650
January, 1919	885	January, 1919	697
February, 1919	824	February, 1919	721
	6093		5075

AMNESIAS IN WAR CASES.*

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AND

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The following cases presented as examples of war amnesia have been selected for very definite reasons. First, their family and personal histories are negative so far as could be elicited; second, their educational histories gave evidence of their being of average intellectual capacity; third, they had all been in active service from six months to a year and one-half before the onset of their amnesia, and had engaged in front-line fighting.

There was no question of these soldiers being psychotic or neurotic prior to their loss of memory. All were the type of individual that one would have considered desirable for military service. Further, these cases, although having incidental organic elements in their etiology, are primarily of psychic origin; that is, the emotional factor is by far the most important. The fact that in two of these cases the memory was completely restored by the use of psychotherapy again emphasizes the importance of psychic trauma in the causation of the amnesia.¹ The attempt will be made here to show the relation of the war amnesia to the process of dissociation. Rivers has discussed dissociation in its instinctive aspects and also stated that it has also been utilized by the later accretions of human mental process—thought and reason. It is, thus, a general fact not only of instinct, but of all of mind.

Dissociation plays a most important part in the mental economy. The psychologist usually thinks of dissociation as some abnormal

* Read at the seventy-fifth annual meeting of the American Medico-Psychological Association, Philadelphia, Pa., June 18-20, 1919.

¹ Also there are many other cases in which psychotherapy (*auto* or *hetero*) evolved a cure—the receipt of a letter from home, meeting a man from the same company or from the same home town, etc.

process manifesting itself only in unusual situations and not as an aspect of the normal mental life. Mind without dissociation would indeed be poorly organized. There must be some fact in mind which erases from consciousness previous experiences and makes possible clarity in the present content. Passing from one phase to another—from fear to joy, or happiness to grief—depends for its smooth working upon the adequacy of the dissociative process. Often there are blends of mental states, as when a child smiles through its tears, but these fortunately are momentary and very soon the new mental content is appreciated without blur. In the realm of thought-habit there is much more smoothness in mental working than where instincts and emotions predominate. One can go from idea to idea more readily and more gracefully than from one emotion to another. Whatever the process may be whereby one mental fact is dismissed from the mind and another enters to take its place the general notion of dissociation covers it. The fact of dissociation then runs along gamut in mental life from just the dismissal of things from the mind to the abnormal condition of multiple personality. It is, however, rather hazardous to attempt to include under this concept of dissociation the dual or multiple personalities which Dr. Prince³ has so interestingly described, especially, of course, as no organic pathological factors are accounted for under the psychological conception of dissociation which Rivers advances.

Dissociation—as the process which clarifies the mental content and integrates what is called the attention—serves many hygienic purposes in the mental life. For, in the cases of war neuroses one of the great etiologic factors is the duality of consciousness—the presence of fear and pride opposed to each other and gradually wearing down the individual's resistance. One can well say that what ordinarily most makes for mental health and strength is the unification of the personality's effort about some basic purpose, and the absence of painful or pleasurable distractions from this work.

The inability of the dissociative process to function normally, as in the usual coming and going of things of the mind, lead in the

³ Prince, Morton: "The Dissociation of a Personality." (Longmans, Green, London, 1906.)

war cases (due usually to long continued opposed pride and fear) to a severe impulse from the dissociative which, under the conditions of lessened resistance in the personality, was able successfully to erase from the individual's mind large gaps of experience. This served the hygienic purpose of disposing of stimuli which were intolerable to the personality; perhaps also preventing a psychosis or severe neurasthenia.³ The exceptionally great strength of the dissociative function in these cases derives from the fact that the men were living upon an instinctive plane and consequently that the dissociative process functioning purely developed an exceptional potency.

Rivers discusses the problem of dissociation in its genetic aspects. He points out that the caterpillar in the larval stage builds up a highly complex group of experiences which, if they persisted in the butterfly stage, would render many of the important functions of the butterfly's life, such as flight, for instance, impossible. Another example he takes from the frog, showing that memories of the aquatic period of its life cycle would tend to produce reactions having a very disturbing effect upon the adult life of the animal. He compares these with the same facts in human life, stating that many modes of infantile reaction must be dissociated in order to make possible the behavior characteristic of adult life. The experiences which must be suppressed, he says, belong to the domain of instinct. It becomes a question, he continues, whether dissociation of the mental life of man is not a mode of reaction belonging originally to instinct and which has been later utilized by the intellect. He states in closing his discussion, "Experience becomes unconscious and persists in this state because nature is accustomed to utilize the process closely associated with instinct to put out of action instinctive modes of behavior which would interfere with the proper working of a mechanism formed through the combination of instinctive and intelligent modes of recollection."

The basic nature of dissociation is delineated by the vivid manner in which it cuts its way through the whole mental life. The

³ The severe hysterics (mutism, paralyses, deafness) usually had a better prognosis than either the neurasthenias or psychasthenias.

dissociative process servile to the instinct of flight^{*} (the emotion of fear) thus removes from the active memory big batches of experience, in many cases six or eight months of the individual's life. And similar workings are noted in certain other major instinctive facts of the human mind.

According to the behaviorists—notably Holt—"consciousness is response"; this emphasizes the motor aspects of mental or neural functioning. They would perhaps deny as superfluous the possibility of there being any such dissociative mechanism as the one described here, any "clearing-up-of-mind" process to aid its focussing upon the present content. Granted that a unified or integrated response constitutes the highest form of behavior and that normally we respond to one thing at a time, however, under certain abnormal conditions the mind is strained to seek to respond to more than one thing at once with the consequence that fatigue or disease enters. In civilian life one can develop the capacity of having two ideas in the mind at once—or for lesser periods one idea and some unrelated emotion—but two emotions cannot reside harmoniously for long without seriously affecting the individual's well-being. Then, in this abnormal state of over-stimulation (or response), as these war cases illustrate, this dissociative process throws itself into the gap and rescues the mind from destruction. It serves a basic protective purpose—and its adequacy in preserving the individual is evidenced, positively, in cases where intolerable ideas or experiences were thrust from the mind. This is shown by the man who was picked up in Paris completely amnesic. At Base Hospital 117 he cleared up under treatment and told of having belonged to an outfit in which the men abused him horribly. Malingering was eliminated in this case. Negatively, one recognizes certain cases in which the dissociative process did not function, or wherein the stimulus overwhelmed the individual—as in the war psychosis. A typical case illustrating this is that of a lad whose buddie was decapitated as he was running toward him, and the head rolled at his feet. He picked up the head, put it on the body and told him to come along. Shortly thereafter he was hospitalized as a psychosis. The case entered Base Hospital 117 confused, with ideas of persecution and other

^{*} See McDougall, William: "An Introduction to Social Psychology."

psychotic symptoms, *but with an ever-present vivid recollection of this experience*, and was evacuated to a mental hospital some time later very little improved.

Memory is a by-product of experience, something closely related to habit both as regards origin and function; that is, they both come up from the instinctive sea and seem to function independently of it. There are the two facts—instinct and habit. Instinct supplies the push to activity—habits then are formed. Habits are not always developed, as in the case of the calf which is not given suck in time. The concept of order enters here to differentiate these two so closely related facts of instinct and habit. Habit never occurs without instinctive precedence.

Habits are by definition related to the operations of the skeletal apparatus and motor functions of the body, while memory, accorded a certain higher dignity, is given a place in the thought life. Ordinarily, habits and memory reside harmoniously with instinct. Habit rides upon docile instinct, but one always feels that the rider has a poor seat, that the least shock may throw him. In the community life of civilized man there are few causes for regression to the primitive planes of mental life. In war, however, this does not occur often, and we find that under the severe strains and trials of a campaign, habits are as frail barks tossed by the raging sea of instinct—instinct which has been dormant and which has not waned. So, just as habits are temporarily obliterated or pushed to one side by some very great emotional stress, so, likewise, may the instinctive functionings cast aside, shunt-off in some way, or, to use the term as Rivers employs it, “dissociate” the memory.

This summary discussion deals with a group of war amnesia cases in which the precipitating cause was the dissociative process of instinct; *i. e.*, of self-preservation (fear or anger), of the instincts grouped about the self (the “ego strivings”) and of repulsion (horror). The latter two cases illustrate that although most of the war neurosis cases were related to fear, still there were cases whose origin seemed to be some other instinctive fact.

CASE I.—The patient's family and personal history are negative. Entered Base Hospital 117 about the 15th of September, 1918, and at that time had a complete amnesia for all events from the morning of April 11, 1918, up to and including October 25. The last event that he remembers prior

to the onset of his amnesia was landing in Liverpool and the first part of his march from the docks to the train. The intervening 6 months and 14 days were a complete blank and his first recollection after this amnesic period was being arrested by one of the military police whom he told he was looking for his lieutenant, but to whom he was unable to give the name of his division or company or their geographical location. The patient was interviewed daily for eight days, an effort being made to restore the lost memory by means of association. Because all events prior to his landing in England, that is, including his early life, his occupational and school history and military life, were intact—but the patient could not by associative methods go beyond experiences on arriving at Liverpool—the patient was subjected to hypnosis and the entire memory restored in about two hours.

The points of interest that occurred during the amnesic period are as follows:

The patient landed in Liverpool April 11, 1918, marched from the dock to the boat for Le Havre, arrived there April 15. Goes into detail in telling of various moves from that date up to July 18 when they were in position along the Marne River just to the right of Château-Thierry. He was in reserve at Château-Thierry and was relieved July 31 and sent to St. Mihiel where he was held in a reserve position for the big drive. From that salient, they were moved by auto-trucks to Souilly. Here he was transferred to the second battalion of the Fourth Infantry. On the second night his battalion moved up and relieved the first battalion. The patient was not called and the next morning when he got up he found that he had been separated from his company. He states; "I looked around all day but was unable to locate the outfit. At night I returned to Montfaucon and slept. The following morning I returned to the train to go up with the "chow detail" but it had already gone. I looked around until about one in the afternoon for my company but without results. I then returned to the train and Lieutenant Gamon, the officer in charge, showed me where he thought my company was located. A detail was going up to them with chocolate and other things so I started out with them. We could not go through Montfaucon as Fritz was shelling it, so we took another road. Some shells began dropping on the road so we lay down and waited for him to ease up. After about 15 minutes he stopped. There was only one of the men besides myself in sight and we disagreed on which way the others went so we separated to look for them, but I soon decided not to bother looking for them but to go on with the company. They had stopped shelling the town so I went back and through. I left the road to cross the field to reach the woods where the company was located. As I crossed the field I saw a man coming toward me. I did not recognize him as a friend, only as one of the company. *When he was 20 feet from me, I heard a shell coming and lay down. The shell struck him in the neck*

and knocked his head off and buried itself in the ground about 2 feet from me. As I lay there on the ground waiting for the shell to explode, I could do nothing but look at his head. I was never so frightened in my life. I do not know whether *I was more frightened of the head or whether it was expecting the "dud" shell to explode.* Anyway, it did not explode. I tried to get up but could not for I was so weak I could not move. I remained there I suppose five or ten minutes but it seemed like several hours. After a while I got up to go on to the camp and a shell came over. I did not hear it coming. There was just a puff of smoke, then darkness. When I came to I was about 8 feet away from where I was first lying. I remember nothing else until the military police arrested me when I inquired for Lieutenant Gamon. I do not remember whether I went on to look for the company or whether I turned back. I believe it was the next day that I was picked up by the military police."

The foregoing is a very brief abstract of what was obtained from the patient while he was under hypnosis. It was extremely difficult at times to get all the facts as he was very reticent about giving details about the Château-Thierry and St. Mihiel engagements. He showed little or no emotional reaction until he came to the event which precipitated his amnesia, that is, seeing the head of his comrade blown from his shoulders. At this point the patient showed what was presumably the same emotion that he experienced during the actual event, showing all the physical and mental manifestations of terror.

An interesting question arising here is whether the physiological accompaniments of fear—cessation of respiration and heart beat, paralysis of bodily movement, glandular, hyperactivity and so forth—are sufficiently potent to produce unconsciousness. Of course, there are numerous incidents in civil life where persons viewing accidents faint and may remain unconscious for some time. This is probably what occurred (with the added fact of concussion). And later, upon return to semi-consciousness with the recurrence of emotional excitement, the dissociative process related to the self-preserving instinct asserted itself by eliminating with one effort the whole of the patient's memories of his experiences after arriving in Europe.

CASE II.—The patient was born in Rice Lake, Wisconsin, 1892. Joined the army September, 1915. Went to France June 28, 1917. He was admitted to Base Hospital 117 July 10, 1918, with a complete amnesia of all events prior to June 10. On this date he states: "The first thing I remember is feeling very nervous and excited because I could not remember. I was in

a compartment on a French train. I asked if anyone could speak English and found that there was a woman in the compartment who could. I asked her where I was and how long I had been on the train and she told me that the next stop was Cherbourg and that I had been on the train since 1 o'clock. It was then 5. I got off the train at Cherbourg and inquired of the military police where there was a hospital. I was sent to an English hospital where I remained about ten days. I was visited by both American and English specialists, but nothing was done for me. I asked to be transferred to an American hospital. I was sent to Number 8 General Hospital at Rouen and later transferred to Base Hospital 117." The patient states that while he was in the British hospitals he suffered terribly from headache. "Whenever I tried to think, my headache became worse."

This patient, for the first week in Base Hospital 117, was seen daily, probably on an average of an hour and a half. Every effort was made to restore his memory, but without success. He made a very earnest effort to discuss the war and places of battles with the other patients and frequently stated that he had remembered some particular place or name, but these things were simply isolated subjects and seemed impossible to associate with others. At the end of a week, the patient was hypnotized and the following history was obtained:

He came to France June, 1917, began training July 14 and trained up until November, 1917, at various places. At this time he went to Luneville front. He left this front December 12 and was in reserve until June 14, 1918, when he was transferred to Lorraine front. On February 6 he was sent to the hospital at Toul, suspected of having influenza. Here he met a Red Cross nurse with whom he became in love. The 1st of March, while they were out walking, the alarm was given for an air-raid. The patient and the nurse decided to return to town, but when they got to the cross-roads, which was a short way from the hospital, she decided that she would go immediately to the hospital while the patient would return to his barracks. She had started about 15 feet on her way when a bomb dropped nearby, knocking both of them over. The patient was not injured but only dazed for the moment. When he got up he went to the nurse and found what he supposed to be only a moderately severe wound of the arm, although she was unconscious. She was taken to the hospital in a cart and he requested that he be notified in the morning regarding her condition. At 6 o'clock the next morning he received word that the nurse was dead.

This news was a terrible shock to him. He became very emotional, cried and took no interest in anything about him. He was incapacitated for duty for several days and then there suddenly came a great change over him. He began to resume his natural attitude toward life. He seemed happy and gay. He never referred to the unpleasant incident and nobody mentioned it to him. He did, however, claim to have hazy spells which lasted just for a moment. He became slightly confused, but this did not prevent him from doing his work efficiently and the spells passed away within a short time.

The death of the nurse seems to be the beginning of his amnesic period, but other events occurred which confuse the issue to some extent. He was put on detached service as an orderly for Captain Brown and while they were returning from Paris to Abbyville and had just arrived at the latter station, he was in another air-raid and was concussed. This was about the 25th of April. He remembers waking the 1st of May in a hospital, but with a complete amnesia for all events prior to that date. From that time on he was transferred from one hospital to another. On June 9, while being transferred to Rouen as he thought, he stopped off at Securingea and there met several of the Allied soldiers. They began drinking and the next thing he remembered was waking the following day on the train at 5.

The particular points of interest in this case are: First, the psychic trauma which followed the death of his fiancée, then the concussion resulting from the explosion of the bombs in the station at Abbyville, and later on, the over-indulgence in alcohol and its immediate effects.

In many of the neurotic symptoms of a serious nature, like amnesia, there tends to be a habit factor involved. The first onset of the symptoms derives from some severe instinctive (emotional) episode. Just as in all phases of normal habit-formation, the initial act comes of an instinctive impulse—the instinct to walk protruding into the individual's life and bringing about the habit of walking—so, likewise, many neurotic symptoms originate or are "first performed" as a result of instinctive pushings. Fear-impulses, for example, accumulate. Paths of response are blocked. Vicarious expression in neuroticism results, the consequent neurotic habit being formed. Recurrence of neurotic symptoms then resolves into the general problem of habit. In this case, as in many others, any new severe emotional stress may again result in amnesia; and as a matter of fact, this did occur in this case. There were three separate items of amnesia, the last being complete; two strong chords, and then with the *eau-de-vie*, a grand diapason.

The first amnesia developed from the emotional crisis following the death of his sweetheart. The later ones, followed after this first pathfinder. Originally a vicarious instinctive expression, it then developed into a habit. The prognosis in this case would be that any serious conflict in the patient's life would result in the recurrence of his amnesia.

CASE III.—Sergeant in 111th Infantry, an unusually good type of soldier and giving an excellent family history, entered this hospital late in October, 1918. At that time, his amnesia was complete from early in May when he arrived in France until late in October when he was incapacitated and went through several hospitals.

He remembers a movement of troops on the 4th of July. On that date they went into the line at Château-Thierry and the patient recalls having said to himself, "I shall never forget this day, for I am an American soldier in a foreign land, going to the field of battle on July 4. This is the greatest experience of my life." He remembered certain few other facts connected with this experience. He remembers coming into a town, over a bridge which spanned the Marne. The Germans were trying to "get" the bridge, and they lay in cellars for protection. That night, the patient took the first 12 men over the bridge and got them all over safely. Shells were landing on either side; there was no opportunity to turn back, so he kept on going, and turned to the right. They went up a hill and into a big estate on which was a big mansion, and there were many statues and monuments, some of them broken by shells. They went into the mansion through a door which was open, and found French troops there. Some were sleeping and some were eating. They sat down to await further orders, the patient being near the door.

His other remembrance is of giving an order to advance in the Argonne on October 8 and certain unpleasant experiences related thereunto. He says, "I started with 140 men and only 18 came out, of which number I was one. The last thing I remember is bandaging the arm of a corporal and trying to help him get back to a first aid station.

"The battle in which I gave the command to advance occurred on a very clear sunny day, starting just after dawn. I gave the order to advance; we reached our objective and then changed our position several times. On sending for reinforcements, which I did several times, word came back to hold at any cost. Finally, I realized that no reinforcements could come. There were troops in back; runners came giving reports of what bad shape they were in. The men were dwindling all about me. They were practically under machine-gun fire all the time. I was never touched. I was excited. It seemed impossible that I alone was in charge."

He was bandaging the arm of his corporal when concussed by a shell. His next recollection is an incident in a base hospital.

"When I think it over, I would feel lots better to be wounded. A wound is an honor. This (Christ) is a disgrace (referring to neurosis).

"I led and instructed these men. They liked me. I took pride in commanding them. I can command men. I know it. I have proven it. You get to liking your men, a good 'non-com' does. It is not love and yet it seems like it. Oh! I hate to think of what may happen if I give them another order. I am afraid for them, not for myself. I am afraid to order them anywhere because they will suffer, not I."

He dreamt each night that the folks of these boys were pointing their fingers at him accusing him of the death of their sons. He remembers that

he wondered why he was not hit when everyone around him was falling. He wanted to be wounded to show that he himself had gone through as much as they. But to go home unwounded and meet the folks of the men that he had ordered forward was more than he could stand.

This case is interesting, showing, as it does, the working of the instincts associated with the self, or what might be called pride or self-regard. In this case it is a man of unusually good family traditions, he being of an old American family which had taken an active part in all previous wars and who expected that he too would bring honor to the family name. Then, also, besides his pride of family, he himself had as faith, an utter contempt for cowardice, the belief that cowardice was the greatest evil of which a man was capable. He believed that a man should resent any implication of cowardice. He did, as a matter of fact, punch a sergeant in one of the hospitals who passed a remark, implying that he was "yellow."

There is a striking characteristic of the case in that the patient's amnesia was broken through by two facts: First, the July 4 incident at which time he had made the auto-suggestion of never forgetting; second, that the painful incident in the Argonne, which above all others he sought to forget, he remembered. This seems to point to counter-currents of motives: One to forget, one not to forget—pride remembering to display the self (Château-Thierry, July 4) and to abnegate the self (Argonne incident)—and maybe self-preservation or self-defense seeking to obliterate the whole of the unfortunate war career, unsuccessful because of his poor leadership (although he himself was obeying orders!) in the Argonne.

The patient's difficulty arose from the conflict of pride—the feelings about his family name and his honor as a soldier—with fear and horror derived from the awful situation in which he was placed and from the great losses suffered by his men. He was concussed when in the throes of these emotions, and the later functioning of the dissociative process not only obliterated them from his mind, but tore a great rent in his memories which took in all his experiences in France, except the two mentioned above—one of which (the Argonne incident) returned to him in a dream.

In this case a rather interesting symptom was certain spells which the man had from time to time—lapses of consciousness.

These may be attributed to activity of the lost memories trying to reassert themselves in the conscious life. Vague morbid feelings in these cases are generally related to the smolderings of hidden memories. Usually in amnesia cases the patients spoke of "clouds" passing before their minds. One case of complete amnesia caught a fact from one of these vague visions—he made out a brown helmet and became very emotional. He was urged to look hard and get more. Did so. Saw brown men and a woods. after several hours' work with him, urging and assuring that he could get his mind back, his memories were largely recovered.

In the great majority of war amnesias, especially those following upon concussion, there was a residual amnesic period which could not be recovered. This usually related to the time following the concussion and before they came to themselves in a hospital, a period of varying length during which they were dull or confused.

INTERIM REPORT ON THE NEUROSYPHILIS INVESTIGATION OF THE MASSACHUSETTS COMMISSION ON MENTAL DISEASES.*

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There is probably no clinic in the country where intensive treatment of neurosyphilis with Ehrlich's salvarsan, as outlined by Southard and carried out by Solomon, has attained greater proportions or has spread its ramifications more extensively and persistently into the community than it has in Boston. This pervasion of the commonwealth through the social service channels has permitted the collection of statistics so extensive that they may be regarded in a way as an index of the extent of luetic incidence in the population in general. This figure is given at 15 per cent for psychopathic hospital cases.¹ The index for the general population would be, we assume, somewhat lower.

TABLE I.—NEUROSYPHILIS THERAPY, 1914-1919.

CASES TREATED.

A. Working and at school	108
B. Private care (improved)	13
C. Hospital	125
D. Lost	93
F. Died	89
Total	428

Since the institution of systematic syphilitic treatment at the psychopathic department of the Boston State Hospital in March, 1914, 1654 cases with positive or doubtful Wassermann reaction have been examined. Of this number, 428 seropositives (including 71 cases at the Worcester department), which were found to be neurosyphilitic by examination of cerebrospinal fluid or other

* Read at the seventy-fifth annual meeting of The American Medico-Psychological Association, Philadelphia, Pa., June 18-20, 1919.

tests have been treated. Two hundred and forty-six are known to be now living: these are divided into three groups, (A) which includes 108 cases who are working or at school; (B) 13 under private care; (C) 125 who are under custodial care. Of the remainder, 93 are unaccounted for and 89 have died. The most successful cases, those who are working either without treatment or under interval observation, are included in classes A and B, and among those unaccounted for. The period of this work having extended over longer than four years, many cases have drifted away and become lost to us.

Cases which have not been under treatment at least three months are not included in this report.

Omitting the cases that have been lost, and taking into account only the 108 cases at school and work plus 13 cases improved under private care, we have 128 or practically 30 per cent improved.

There are, of course, an additional number of cases among those at present in class C, the hospital group, which will show improvement. Arrested or stationary cases with considerable defect are not included among the improved cases. It now and again happens that cases so classed who seem unpromising—indeed a “drooling dement” in one instance—improve and are discharged in good condition. In the case mentioned, the patient cleared up after several months’ treatment and has been working for over a year in good mental and physical condition. This would furnish an additional source of potential improvements which are not included in the above 30 per cent improved.

DIAGNOSIS AND TREATMENT.

We are agreed with most syphilographers that one of the principal factors in the successful treatment of neurosyphilis is early diagnosis. With this object in mind it has been the custom at the psychopathic department to apply the Wassermann test to the serum and spinal fluids of spouses, children, or parents of syphilitics. In a “Family Study of Syphilitics,” Solomon and Solomon¹ were able to report from 23 per cent to 35 per cent of the members syphilitic.

By this method it has been our good fortune to cull certain early asymptomatic cases of neurosyphilis, besides numerous instances

of positive Wassermann reaction in blood only and congenital syphilis.

We feel that most of these early cases of neurosyphilis had they been allowed to progress without treatment would ultimately classify themselves into definite sub-groups of neurosyphilis, *e. g.*, parietic or tabetic types.

A. THE DIAGNOSIS OF NEUROSYPHILIS.

The most common forms of neurosyphilis, the parietic and tabetic types, are ordinarily recognized with little difficulty. The various forms of paresis, excited mania, slow dementing and other types are usually developed to an unmistakable stage when the physician is consulted.

The unusual cases, however, those of doubtful color, are the problems for laboratory analysis and diagnosis. These early borderline and atypical cases in which the clinical signs are vague—a single fainting spell or slight convulsion; a slight lassitude or lessened ambition; headaches referable to no particular cause—should all be analyzed for neurosyphilis. It is for this class of cases—where the destructive syphilotoxin has invaded but not yet gained a foothold in the nervous system, the early cases—in which treatment with salvarsan offers the most, that we make a special plea to the general practitioner and the general hospital clinician for early diagnosis.

In the general medical and nerve clinics or psychopathic hospital out-patient clinics these cases are frequently seined out. It is this early or "psychopathic hospital" group which usually responds to treatment with an arrest of the process or even recovery. If allowed to slip through the diagnostic net here, they later develop a distinct differentiated type of neurosyphilis and enter the committed or "state hospital" group as parietics in which the reaction or treatment is less prompt and much less certain. No obscure case of the nature mentioned above should be relegated to the psychoanalysts or labelled psychoneurotic until neurosyphilis has been excluded by careful spinal fluid examination.

From observation we believe that a positive diagnosis of neurosyphilis, *i. e.*, syphilitic inflammation of the central nervous system of any form, can definitely be made from laboratory findings

when clinical evidence is either yet absent or of such a mild form that neither the patient nor his family are aware of it. We have found several cases in which the spouse of a paretic has shown Wassermann reaction on serum positive, Wassermann reaction on fluid positive, increased cell count, globulin present and albumin increased and a distinct gold sol reaction in which there were as yet no mental or physical signs.

TABLE II.—FAMILIAL SYPHILIS.

		FAMILY A.				
Age.		Wassermann reaction.		Globulin.	Albumin.	Cells.
		Serum.	Fluid.			
F. 33		+	+	2	2	269
M.		+				
13		+	+	0	N	1
12				0	N	0
9		+	—	0	N	1
8		+	—	0	N	0
4		—				
Gold sol.						
						5555443210
						5555441000
						0012100000
						0033310000

Again, we have noted (Tables II and III) in the siblings of juvenile neurosyphilitics varying degree of positive laboratory findings—the older child may be distinctly paretic, a frank case of congenital juvenile paresis. The younger children will show varying degrees of syphilitic involvement. For example, the next in order of birth may show a Wassermann reaction on serum positive, with a modified gold sol in the syphilitic zone—a later birth will show an entirely negative laboratory picture. This rule, that the further removed from the parental infection the more attenuated the virus in the offspring, has been almost constant in our cases.²

TABLE III.—FAMILIAL SYPHILIS.

		FAMILY B.				
Age.		Wassermann reaction.		Globulin.	Albumin.	Cells.
		Serum.	Fluid.			
F.		+	—	0	N	0
M.		No test.				
12		+	+	0	N	37
6		+	—	0	N	1
5		—	—	0	N	0
Gold sol.						
						0000000000
						5555531000
						1111210000
						0000000000

Here it seems logical, other diseases excluded, that the syphilitic toxin is responsible for the gold curve in the younger children. Thus, with absence of characteristic clinical signs the diagnostico-positive laboratory combinations in the order of relative positivity are as follows: First, Wassermann reaction on serum positive, Wassermann reaction on fluid positive, with syphilitic gold curve, second Wassermann reaction on serum positive, Wassermann reaction on fluid negative with modified gold curve, that is, one reacting in the syphilitic zone. We could therefore be reasonably certain of a diagnosis of neurosyphilis with a positive Wassermann reaction on the serum and a gold reduction in the syphilitic zone.

There are, no doubt, cases of neurosyphilis where the destruction wrought has been either so slight or of such a mild degree as to escape the most sensitive tests of the present-day laboratory. It is also quite possible that such fine degrees of neurosyphilis might either remain stationary or resolve spontaneously. But until we know of a reliable method of sorting out such cases we are bound to treat all cases with positive evidence of syphilis no matter how meager.

TABLE IV.—NEUROSYPHILIS.
DIAGNOSIS EX NOCENTIBUS.

		Wassermann reaction.		Cells	Gold sol.
		Serum.	Fluid.		
First test	State				
	Laboratory	—	—	0	0000000000
	City				
	Laboratory	±			
		Retest	—		
After two injections of arsphenamine:					
Second test		—	+	53	2442330300

Another angle of attack is the so-called "provocative" method (Table IV) in which the diagnosis is made on the evidence of a Herxheimer reaction. This is positive evidence of luetic involvement since a neurorecidive never follows administration of a trepanosomocide in non-luetic cases.*

The case cited in Table IV was that of a man aged 38 who had made almost a complete recovery (slight loss of power in arm) from a hemiplegia three years previous and now came to the hos-

pital for mental disease. Though all tests were negative on first examination, excepting the Wassermann reaction on serum in a second laboratory was \pm , but negative on a second specimen submitted, two weeks later after two injections of arsphenamin, the Wassermann reaction on fluid was positive, there were 53 cells and a gold curve of a paretic type.

B. TREATMENT OF NEUROSYPHILIS.

As a systematic working basis, we have chosen a time span of three months during which intensive treatment with arsphenamin and mercury is given. This is usually sufficient time to determine whether a case will react favorably or otherwise.

During this period the following method is carried out: The case is put on combined treatment with mercury and salvarsan. If there are no reactions of intolerance after the first two doses of 0.3 g. and 0.5 g. of arsphenamin, respectively, the treatment is continued in large doses (0.5 to 0.6 g.) bi-weekly for a period of four weeks, or approximately eight injections.

The arsphenamine is then rested and mercury is allowed to continue at gr. 1 doses weekly. The therapeutic rest in the arsenotherapy avoids an anaphylaxis, which develops in most cases if treatment is continued at such rate and dosage.

After four weeks the arsphenamin is resumed and another series of eight injections, same dosage, given. The mercury is usually discontinued through the third month; the object here again to keep the organism in a state of saturation short of salivation. This constitutes a course of intensive treatment. A retest of the serum and spinal fluid is then made.

We find now that in many cases the Wassermann reaction on the serum and in a lesser degree the Wassermann reaction on the fluid have become negative. The cell count is usually markedly reduced, the globulin content reduced and an appreciable improvement in the gold sol curve. Concomitant with the laboratory findings, there is a marked improvement in the mental symptoms—confusion cleared, memory partially or entirely restored, euphoria dampened, so that the patient begins to have some insight.

Another class of cases does not show as rapid change and requires further intensive treatment after a short therapeutic

rest. Here a second course of treatment is administered combining potassium iodid saturation with the mercury and arsenic. To this second concerted attack a further number of these reluctantly yield, but not so evenly. The positive Wassermann reaction on the fluid may persist, or after change to doubtful and negative, may return to positive. Or the cell count may remain high, especially in diffuse types. The gold sol will continue positive or show only slight change. With these laboratory signs, however, there frequently occurs marked improvement in the mental and clinical states.

The patient is frequently discharged, resumes his work or obtains employment of a similar type and reports in the outpatient department. These cases usually become chronic from a laboratory and neurological standpoint, though they remain clear mentally; or, a positive Wassermann reaction on the fluid may linger though the Wassermann reaction on the serum stays negative.

A third class of cases rapidly dement and decline, following the course of paresis to dilapidation, which has been so common in institution cases.

Here it will be convenient to divide the cases into a "custodial" or committed to hospital group and a "psychopathic hospital" group.

The custodial care group includes the well-developed, full-blown case of general paresis with dementia, tremors, speech defect and the classical reflex changes. If not already begun, the paralytic symptoms soon develop and are followed by trophic disturbances. This is the late case in which the period between the onset of symptoms and institution of treatment has been too long, not necessarily by actual time, but gauged by the amount of progress in the disease; the time varies in different cases.

The psychopathic hospital group includes cases of shorter duration. A slight character change or unwonted irritability has been noticed by the spouse for the past two or three months. Amnesia and slight euphoria and lack in concentration with inability to carry on; or the only sign of a neurosyphilis may be a convulsion or fainting spell for which the anxious patient or frightened wife resorts to the psychopathic hospital.

On examination an Argyll Robertson pupil may be present or deep reflex changes with slight Rombergism, mild tremors—one or several—or *entire absence* of these neurological danger signs may be found. The latter class is the more favorable for treatment and yields more readily and completely to the intensive use of salvarsan.

The question of remissions has been studied: Remissions with apparently more or less degree of recovery, at least of the former mental state, and extending over various periods of time according to different writers have always occurred. A careful analysis of remissions of untreated cases has been made by Solomon¹ who is quoted as follows: Out of 300 untreated cases but 5 were found capable of self support and 10 more who appeared to be in normal remission. Whereas, of the treated cases there were 50 out of 200 capable of self-support. This number has slightly increased since this investigation, one and a half years ago.

The question of a cure is a much debated one. Mott² quotes Dreyfus, who states that "only after the cerebrospinal fluid gives all normal reactions may a cure be said to be obtained." Following this dictum in such cases where a positive reaction of one sort or another, say a gold sol with a slight amount of globulin only persists after the most intensive and prolonged treatment, all clinical and other signs disappeared, shall we still continue to treat?

Hoche,³ writing on the curability of neurosyphilis, seems to take almost too lenient a view. He states that we cannot be prevented from speaking of cures on account of organic scars, such as reflex findings, or even permanent psychic defects, such as defective memory, lack of concentration and slow ideation, which may be due to cell destruction.

We prefer not to designate as cured cases with so considerable a resultant defect. It seems to us that the term "arrested" or "stationary" is more reasonable. On the other hand, we feel that it is not necessary to be as ultraconservative as Dreyfus and would be willing to call the cases cured if the Wassermann reaction has become negative in the blood and fluid, globulin and albumin practically normal, cells reduced to within 5 and a slight gold reaction in three or more tubes, with partial reduction in the syphilitic zone, provided, of course, the patient had men-

tally recovered and would show no more organic defects than an Argyll Robertson pupil or a pathological knee-jerk, for example.

COMPLETE CURES.

A complete recovery mental, physical, and laboratory after less than five years or ten years or even before death may be questioned. An apparently recovered neurosyphilitic may show none of the above signs or findings, yet at autopsy following intercurrent disease of senility, a focus of inactive treponemas may be found to occupy a circumscribed area somewhere in the brain, just as we commonly find an area of fibrosis or calcification in the lungs, the scar of a healed tuberculosis.

Yet we have two cases, one of the "psychopathic hospital" group, the other of the "committed" group, which might be discussed as complete recoveries as far as clinical and laboratory examinations will show. Both these cases showed positive serology of neurosyphilis of the parietic type. Neurologically one had seizures and was somnolent; pupils and other reflexes showing no change. Mentally there was depression, irritability, amnesia, cephalalgia, photophobia with eye pain (cranial nerve involvement?), bulimia, fatigue, lack of insight,—but all to a mild degree.

After intensive treatment extending over a period of almost three months of 25 injections and a total of 10½ grams of salvarsan with mercury, the serology and fluid became entirely negative including Wassermann on the blood and spinal fluid, cell count, globulin, albumin, and *gold sol tests*. Neurologically there were two convulsions after treatment was given but none since. Photophobia and eye pain have disappeared. Mentally entirely clear. Patient has been working regularly and continuously for two and a half years since his recovery and is at present apparently normal and working. This was probably a case of 'paresis sine paresi' which cleared up with treatment."

The other case showed laboratory findings positive for neurosyphilis of the parietic type including all the tests. Neurologically knee jerks were diminished, tremor of fingers, vesical incontinence. Pupils, nothing abnormal. Mentally there were depression, paranoid ideas, retardation, mutism, and visual hallucinations. He was also regarded as showing dementia.

After intensive treatment which in this case was late in its inception, but extended over a period of 10 months, during which period a total amount of 15 grams of diarsenol were given intravenously the patient showed marked improvement. During the course of the treatment patient suffered a right hemiplegia which was temporary and cleared up promptly. Patient has recovered entirely from his mental symptoms, memory restored, insight good, conduct and judgment good. Neurologically there is a slight inequality in pupils but they react normally.

The laboratory findings have become entirely negative, the patient has been working for over a year, holding the same job which he took 9 days after leaving the hospital. In this case the only sign or scar is a slight inequality in pupils which were equal on first examination.

We have endeavored to get late information on other inactive cases but many such who probably are similar to the cases just described, refuse to come for consultation, being too busily and more profitably than ever before employed at the shipyard, trades, etc., doing war work.

Our most favorable cases are those which are most difficult to follow, since being objectively and subjectively recovered, they feel it useless to further remain under observation and are frequently lost.

TOXIC REACTIONS.

TABLE V.

Toxic reactions	64
Vaso-paretic	26
Enteric	15
Neural	13
Systemic	5
Dermal	4
Patients	125

In treating a large number of cases as intensively as has been the custom with our cases, it is to be expected that we have a great number of toxic reactions, but very few have been of a serious nature. From a close study in the last six months we have been able to classify the following types.

Vaso-paretic which includes the so-called common nitritoid, vertigo, immediate nausea and vomiting, fainting and palpitation.

Enteric or gastrointestinal, which includes late nausea and vomiting beginning after 12 hours and lasting for a day or more, the icteric and the diarrheal.

Neural reactions include headache, spinal crises and neuritic pains.

Dermal, which may be urticarial or in the form of a simple dermatitis, a burning sensation, and the deposit of pigment, the latter chronic.

Systemic, characterized by chills, fever, general malaise.

The most common so-called nitritoid reaction is rarely serious although alarming and distressing to the patient.

Various methods of combating these reactions have given little or no success. The injection of adrenalin has been tried and discarded. The method of producing an antanaphylaxis, described by Stokes,⁹ works remarkably well in some cases; in others it seems to fail entirely. He recommends the injection of a small amount, say 0.05 grams of arsphenamin from 30 to 60 minutes prior to the treatment. This produces a state of antanaphylaxis which lasts for two to three weeks when it is necessary to repeat the operation. In cases in which it is possible to produce such an antanaphylaxis, all unpleasant reactive symptoms are entirely eliminated and the patient is able to tolerate a large dose without ill effects.

A peculiar reaction occurred in one case of epileptic neurosyphilis in a patient who had received a great deal of treatment. He had a dermal reaction which consisted of a dermatitis with marked itching, burning, erythema and later scaling; thereafter treatment had been temporarily suspended. When the injections were resumed he appeared to be free from any reaction. However, 15 to 20 minutes after an intravenous treatment he was suddenly seized with most intense and excruciating pain focused in one point, the center of the spine in the lumbar region. The patient was conscious, ground his teeth, perspired profusely and showed extreme engorgement of the blood vessels of the head and neck, the result of holding his breath and gripping with all his torose vigor. This lasted from two to three minutes and then subsided for 30 seconds, during which time the patient was free from pain. A recurrence of the same excruciating pain lasted again for two or three minutes, during which time the patient pressed

his fist forcibly against the spot in the lumbar spine and cried out with pain. This cycle recurred four or five times and gradually subsided. A week later there was a similar reaction of the same intense pain in which the patient broke off a healthy tooth during an exacerbation. It has not occurred since. There was no similarity between these reactions and his customary epileptic convulsions.

The rational treatment of reactions lies in the prevention. This is best accomplished by giving therapeutic rests as stated above, just before the development of an intolerance.

RESULTS OF TREATMENT.

In a comparative study of the laboratory changes in a limited number of clinically *improved cases* (28) in which we were able to get complete before-and-after tests of sera and spinal fluids, we found the following:

TABLE VI.*

A. Improved as to Wassermann reaction on blood and fluid and gold sol.....	9 or 32%
B. Improved as to Wassermann reaction on blood only, additional	5 or 18%
A. and B. Improved as to Wassermann reaction on blood....	14 or 50%
C. Improved as to gold sol only.....	3 or 11%
D. Improved as to Wassermann reaction on cerebrospinal fluid and gold sol.....	1 or 4%
E. Stationary as to Wassermann reaction on serum and gold sol	9 or 32%
F. Worse as to Wassermann reaction on serum and fluid and gold sol	1 or 4%

* Table VII gives a detailed account of the cases represented in Table VI.

Under A (Table VI) are represented 9 cases—7 of these had positive reaction on serum and spinal fluid and a more or less typical paretic curve; the other 2 had negative Wassermann reactions on the serum but were otherwise the same. All 9 cases showed great improvement after intensive treatment extending over a period of from three months to four years.

Under B (Table VI), there are 5 additional cases in which the blood serum became negative, the spinal fluid remaining unchanged. Thus including the cases under A and B, we have 14 improved cases or 50 per cent in which the Wassermann reaction of the serum became negative.

Under C there are 3 cases or 11 per cent in which the gold sol only showed improvement, the Wassermann reaction remaining unchanged.

Under D we have one case in which the spinal fluid was improved as to Wassermann reaction and gold sol only. The Wassermann in this case changed from positive to doubtful but the gold sol reaction became negative (Case No. 19, Table VII).

Under E there are 9 cases or 32 per cent which remained stationary as to all three tests.

Under F there is 1 case in which though there was clinical improvement, the serology including the Wassermann tests on the serum, fluid and the gold sol all grew slightly worse (Case No. 13, VII).

TABLE VII.—CLINICALLY IMPROVED CASES.

No.	Before treatment.			After treatment.		
	Wassermann reaction.		Gold sol.	Wassermann reaction.		Gold sol.
	Serum.	Fluid.		Serum	Fluid.	
1	+	+	55333,32000	±	—	00000,00000
2	+	+	55553,31000	—	—	00000,00000
3	+	+	55555,53100	—	+	44443,21000
4	+	+	55555,54431	+	+	55555,52100
5	+	+	55555,43331	+	+	35555,13000
6	+	+	55555,55310	—	—	00000,00000
7	+	+	55554,43210	—	+	00111,00000
8	+	+	00013,32110	—	±	12223,33300
9	+	+	45444,21000	—	±	10000,00000
10	+	+	01210,00000	—	+	00022,20000
11	+	+	54433,21000	+	+	12223,33100
12	—	+	00123,43100	—	—	00111,00000
13	—	±	02222,21000	±	+	55555,51000
14	—	+	55554,33100	—	±	00000,00000
15	+	+	55433,21000	+	+	55544,20000
16	+	+	44444,33310	+	+	00000,00000
17	+	+	55554,32110	+	+	55555,53320
18	+	+	55544,30000	+	+	23355,44300
19	+	+	12344,44300	+	±	00001,00000
20	+	+	55544,22222	+	+	44333,20000
21	+	+	44433,32100	—	—	00221,00000
22	+	+	55544,43311	+	+	11133,32000
23	+	+	55554,43211	—	+	55541,10000
24	+	+	55555,44320	+	+	53555,54433
25	+	—	12320,00000	+	—	00000,00000
26	+	+	Paretic	—	±	Negative
27	+	+	55554,43100	+	+	55554,43332
28	+	+	11333,10000	—	—	00000,00000

TABLE VIII.—COMPARATIVE SEROLOGY AND FLUID FINDINGS 27
FATAL CASES.

A. Distinctly improved as to Wassermann reaction on fluid and gold sol	1 or 3%
B. Improved as to Wassermann reaction on serum and fluid..	2 or 7%
C. Improved as to Wassermann reaction on fluid only.....	2 or 7%
D. Improved as to Wassermann reaction on serum only.....	2 or 7%
E. Improved as to gold sol only.....	4 or 15%
F. Stationary	15 or 56%
G. Worse. Wassermann reaction and gold sol.....	1 or 3%

A study of Table VIII, which was made from 27 cases with complete data taken before treatment and again shortly before death shows that 56 per cent of the cases were practically unaffected by the treatment.*

One case (A) showed distinct improvement as to Wassermann reaction on fluid and the gold sol, but the Wassermann reaction on the serum remained positive.

Two cases (B) showed improvement as regards Wassermann reaction on both serum and fluid: in one case two doubtfuls changing to two negatives (serum and cerebrospinal fluid): the others both positive at first, changing to both negative with a slight improvement in the gold sol.

Under C are two cases which showed improvement in the Wassermann reaction on the fluid only and D on the serum only.

Distinct improvement in the gold sol curve without reaction in the Wassermann test occurred in 4 cases, 15 per cent. One of these cases showed a practically negative gold sol with a terminal marked tabetic involvement during the last four months.

F represents by far the largest group, 15 cases or 56 per cent in which there were no changes in serology or fluid findings from the time of the first examination until death.

One case (G) in which at first the Wassermann reaction on the blood was \pm , all other reactions positive for paresis, grew worse until after treatment and at remission the blood serum also became straight positive before death.

According to this analysis of fatal cases in which minute care was taken to observe all laboratory and clinical changes, includ-

* Treatment was combined—salvarsan and mercury—intensively given over periods of time varying from three months to two years; mostly averaging from 6 to 12 months.

ing besides the Wassermann tests and gold sol reaction, also the cell count, albumin and globulin estimation—the latter not given in these tables because they were not considered as vitally affecting the argument and because leaving them out of consideration simplified the matter greatly—we find that over 56 per cent of the cases in which the diagnosis of neurosyphilis (especially the parietic type) is crystal clear both from a clinical and the laboratory standpoint may be expected to terminate distinctly unfavorably. With exceptions, little or nothing can be hoped for from treatment as we know it today in these fully developed “committed type” cases.

CONCLUSIONS.

1. In 428 cases of neurosyphilis treated during a period of four years, 129 cases or practically 30 per cent showed definite benefit. 125 cases are under treatment in hospitals of which a certain percentage can be expected to show similar improvement. Among 93 cases that have drifted away, another definite proportion, probably a larger number comparatively can be presumed to have benefited from treatment.

2. There are two definite groups of cases of neurosyphilis; the early or “psychopathic hospital” group and the advanced committable or “custodial group.” The early case of the “psychopathic hospital” type is not met with in insane hospitals—except in such as conduct out-patient departments. These cases also frequently first come to professional attention through the field of general or “internal” medicine.

3. The relatives (spouses, parents, offspring) of syphilitics and neurosyphilitics form a most important group in which not only syphilis but the earliest degrees of neurosyphilis, in the presymptomatic, often entirely unsuspected, stages, are brought to light by lumbar puncture and sero-analysis. It is in these types that by far the most benefit can be expected.

4. Early diagnosis preferable before pronounced mental symptoms have appeared gives the greatest promise of successful results. For it seems that for some reason, probably of a physiologico-chemical character, the curative agent is less able or practically unable to influence certain bacterial toxins after they have had time to combine with the neuroplasm. Another instance of this phenomenon is shown in the case of the tetanus toxin.

5. Apparently advanced neurosyphilis is not a contra-indication to treatment—there is a distinct, though not large—percentage of such cases that amply gratify the efforts of intensive attack.

6. In early and atypical cases the most exhaustive, and often, repeated, serological and spinal fluid examinations are the best guides to the diagnosis. The provocative method should not be overlooked.

7. Intensive and prolonged treatment to the point of saturation with the combined force of the three specifics, arsenic, mercury and potassium iodide. Arsphenamin has been preferred to neoarsphenamin as more lasting in its effects.

8. The *therapia praesens* of neurosyphilis is but a transition state in rational syphilotherapy. Medical science has discovered several good clues which must be followed up; and others ferreted out and run down before the solution of the problem is complete. Indeed the successful treatment of paresis and tabes as well as general vascular syphilis and visceral tertiaries such as the crippling cradio-pathia, etc., may ultimately be realized in the field of preventive medicine. With chemotherapy, however, Ehrlich has doubtless found the most vulnerable approach to the treponemiotic diseases, but further research is necessary and other combinations must be found before the life of this anthropagous pest is successfully snuffed out.

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A DISSOCIATED PERSONALITY.*

WITH AN ANALYSIS OF ITS PSYCHOLOGICAL PROBLEMS.

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I am reciting below the history together with my observations of one I. S. B., not so much in order to place his case on record as to use him as a basis of discussion concerning some of our viewpoints in connection with the psychoneuroses in order to focus attention upon their validity.

I. S. B. had been engaged for some years in evangelistic work. At the same time he carried on a business which consisted of borrowing money from people, whom he told, either personally or through his agents, that he was using this money to finance business men who were unable to lift their shipments from the railroad, and who would pledge with him the bills of lading as security for the money that he would lend them. He would explain that these clients, as he called them, would be willing to let him have 10, 15 or 20 per cent for a 20- or 30-day loan, because they could make that much money, or more, on their shipments, and this he would offer to divide with those who loaned him the money. He combined his evangelistic speaking with the money-borrowing business; that is, the people who were in his evangelistic party would act as his agents in getting money for him. He had been carrying this on for about four or five years. The big volume of business was done by him in the last year or two. For some months prior to his exposure, he had allowed his checks to go to protest, but he had such a hold on his agents and customers that this circumstance did not seem to prevent him from borrowing money long after his checks would be returned unpaid.

When he could not stave things off any longer, he had certain of his associates enter judgments for large amounts against him in court, and this precipitated the filing of a petition in bankruptcy against him on October 17, 1918. A receiver was appointed by the United States Court, who took possession of his property at half-past 10 in the morning, and while the receiver was there, B. himself came in and took a keen interest in the matter, and acted and spoke as any average man would have under the circumstances; that is, he inquired as to the best method, and the quickest method, of lifting the receivership, and consulted with the coun-

*Read at the seventy-fifth annual meeting of The American Medico-Psychological Association, Philadelphia, Pa., June 18-20, 1919.

sel on this very point in the presence of the receiver and others. His counsel told him that in the meantime he would have to recognize the order of court and submit to it, and that if he wanted to ask for the vacation of the receivership, he would have to do that later, to which he submitted. He entered into the spirit of the thing so far as to show the receiver through his offices and gave him the combination of the safe and other things of that kind, and while the receiver was busy about the office, he disappeared.

Nothing more was heard of him by the receiver or his counsel until a few days later, when they were informed by B.'s counsel and by others who were present at the time that he had left his offices that day and walked across a very narrow hall to the office of his counsel, that his counsel had said to him "B., I told you that this thing would be inevitable," whereupon I. S. B. lapsed into this condition from which he appeared to be suffering thereafter; that is, a lapse of memory.

We quote the following excerpt from the request to court for permission to examine him:

"That your petitioner is satisfied from information received from persons who have observed the said I. S. B., that the said I. S. B. is shamming and feigning loss of memory, that while in the hospital he has communicated with members of his family by Morse Code, he and the members of his family understanding telegraphy, and that he is feigning his symptoms and is acting in collusion with members of his family and others to have himself declared insane so as to avoid the consequence of his criminal acts and to avoid being compelled to disclose in court the whereabouts of his assets."

This petition was made consequent to a confinement in St. Francis Hospital from October 23, 1918, to November 20, 1918, and after his removal to jail at the request of the police department. In November, 1918, a hearing was held to determine why the said "I. S. B. should not be punished for contempt, in not appearing before the referee in bankruptcy to testify in said proceedings." His physicians testified that he was incapable of answering questions intelligently, and that his appearance in court might render his mental state more intense. A diagnosis of hysterical amnesia was made by them and so testified to at these proceedings.

At this hearing, counsel made the following statements:

"1. That I. S. B., after he lapsed into this apparent condition of lost memory, accused some of his friends with having stolen from his pocket two papers which he took out of his desk while the receiver was there.

"2. That while the receiver was there he managed to get into his private office and into his desk and put some papers into his coat pocket, and after he was taken home in an automobile, he accused the people in the automobile with having stolen these papers from his pocket.

"3. That since he has been in this condition of having his eyes closed, when a certain special friend would come into his hospital room, he would say, 'Oh! where is my friend'—naming this man—but that he never called for this man when he was not in the room.

"4. It was further claimed later that upon leaving the hospital for jail he asked for an automobile instead of the hospital ambulance and that when leaving the jail for home, he signed his discharge himself without any apparent difficulty."

My observations of I. S. B. were carried on in the unpropitious environment of the county jail. His cell was in the dark so that he was free, while in it, from close observation. He was rarely still. His hands and feet moved constantly. He would pull at his unfastened shoes or at his tie, or rub the back of his hand across his nose, or place his hands closely against his body. On being asked to get up and go for a walk, he would rise immediately and shuffle out. His steps were very small, with slightly bent and fixed knees, without any ankle motions, with arms flexed at the elbows, and with his hands slightly clenched. His eyes were constantly closed. He entered readily into conversation after being seated at a table. Some of his answers to personal questions representing conversations of many days were as follows:

"I am 26 years of age."

"This is 1900."

"I am the telegraph operator here."

"This is Mohawk."

"My home is at Loudenville."

"I went to school there until I was 17."

His voice was a drawling, high-pitched one, infantile in type, his lips being pursed, and his jaw slightly protruded.

On being asked why he did not open his eyes he commenced to cry, saying, "Oh! my eyes. They are nailed shut. They nailed a board to the back of my head. They drove the nails here, and here, and here, and here"—pointing to four places and asking me to feel them. "Here they come out just below my eyes. Dr. Purdy wishes to grease the nails and pull them out."

Q. Was Dr. Purdy here?

A. No, he wrote about it to Lloyd.

Q. Who is Lloyd?

A. Lloyd helps me in everything. Are you McKim? (He is the train dispatcher.)

Q. Don't you know McKim's voice better than that?

A. No, I don't know his voice. You might be McKim.

Q. Why doesn't your wife visit you?

A. Why doesn't my wife visit me? Why, she lives 16 miles away. I haven't time to go to see her.

Q. Why not take an auto?

A. What is that, an auto? I don't know what that is. We have a horse and buggy.

Q. Why don't you go back to work?

A. Why don't I go back to work? Well, I am out here in the waiting room with you. Someone is calling me now. I will go back to the office, if you will help me. He thereupon arose, turned from the chair directly to the door, fumbling at it and then remarked, "I can't find the door," and then started to feel along the iron rail in an endeavor to get his bearings.

A. What am I wearing? Why, this is a sweater. Yes, it is a shawl sweater.

Q. Do you know that those kind of sweaters were only made in the last six or seven years? (No answer to this.)

Q. Why do you walk this way?

A. Why, I walk all right.

Q. Don't you hear the guard telling you to turn to the right?

A. No I don't hear anybody saying anything. Didn't you call me? Didn't you ask me to come into the waiting room?

Q. Where is this waiting room that you are talking about?

A. Why at Mohawk, of course.

Q. Where is your wife?

A. Why she is still at Kilbuck. I will take Sport and drive over when I get time to see her. Lloyd Stats takes care of things while I'm gone.

In recounting episodes of his boyhood life, upon several occasions his face would light up as he would tell how the boys one day found Checker Davis drunk and rolled stones down on him. He would always add to this that this man was dead now. On one occasion, therefore, I asked him this question:

Q. How about your own life at present, is Davis better off?

A. Oh! that would be all right, I am going to heaven you know.

Q. Why do you think so?

A. Because the Bible says "Whosoever wishes," and I want to.

On several occasions when the jail gong would sound, I would ask him what that was, but he always answered, "I heard nothing."

On occasional visits he would find difficulty in getting out of the chair to arise and upon one occasion cried and said, "Please help me." Somebody has got me tied. Won't you untie my legs?"

Q. You are a good man, B.?

A. Yes, when my baby was 11 months old I told God that if it was saved that I would never smoke or chew and I never have.

Q. What did you do at the hospital?

A. Hospital? I never saw one.

Q. Never in your entire life?

A. No, we have no hospital at Loudenville.

Q. But you have been to other places?

A. Well, there is none at Coshocton.

Q. But you have been at Toledo?

A. Yes, but I never saw a hospital.

Q. What do you do to amuse yourself?

A. I like to go fishing.

Q. Do you like to catch suckers?

A. No, they are too full of bones.

Q. Do you remember what Pickwith said about fishing?

A. Who is Pickwith? I never heard of him.

Q. There is a darkey coming down the railroad track, who is he?

A. There is no darkey at Mohawk. We only have 43 people here.

Q. Don't you hear his dog barking? (A colored prisoner was just below him playing with the warden's dog. (Without his knowledge the negro with the dog approached him.)

Q. (To the negro.) Do you own the dog?

A. No, it isn't my dog.

Q. (To I. S. B.) What did he say?

A. There is nobody here. I don't hear anybody. (The colored boy was standing between the two of us.) Speak louder, I said to him, and tell this gentleman about your dog. He then spoke very loudly, "I don't own this dog.")

Q. Do you hear him now?

A. No, he answered. I don't hear anybody but you, Everett. (On several occasions he assumed that I was some boyhood friend.)

Q. You know that I have been away, won't you help me pass the time this evening, since I will be alone?

A. What do you want me to do?

Q. Come over and play checkers.

A. I cannot see. I cannot play. But I will sit down beside you. I will sit with you as long as you wish.

Q. Will you come now?

A. No, no. I have to cross the railroad track to go to your house and I am afraid, because I cannot see.

Q. Will you come down to Johnson's store?

A. Yes, I will do that.

Q. You are not very keen about it, though, are you?

A. Keen? I don't know that word.

Q. You would be glad to do things for me.

A. Oh! yes, I'd do anything for you. Where did you get those words? Was that when you went to Oberlin?

Q. What is that broken-down gondola doing at the crossing?

A. Gondola? Oh! yes, I know what a gondola is.

Q. Don't you know me to-day?

A. Who are you?

Q. Everett Darling.

A. Everett Darling? I used to know someone by that name. I don't know you. Lloyd, there is Jim trying to get us. Where is my stylus? Don't you hear 423 going through, Lloyd? Take care of it while I get Jim's message.

Q. Are you concerned about your suit, Ira?

A. My suit is still good. Its warm enough for this cold weather.

Q. What does your father do?

A. He makes barrels.

Q. Didn't you tell me that he was a justice of the peace? (After some reflection, at first denying, he finally said, "Yes, I guess he was." (To Lloyd, "Don't you know. Answer all these questions of this man.")

Q. Didn't you tell me that you had a Blackstone which belonged to your father and which you loaned to Lloyd?

A. I haven't any books. Blackstone, no, I haven't any such book. I don't know what kind of a stone that is. You answer him, Lloyd. Tell him what books of mine you have.

Q. How would that sound on a dictaphone?

A. The only phone I got is the one here I am telegraphing with.

Q. That is the only one in your cell, you mean.

A. Cell? I have two cells here. I use two cells to run my instrument. (Turning to Lloyd, whom he assumed to be present.) He seems to repeat things like a phonograph, doesn't he Lloyd?

Q. What kind of a phonograph are you using?

A. Never heard of such a thing. (I had another prisoner join in the conversation.)

Q. We have to be satisfied here, don't we, Mr. B.?

A. What's that? What's that you are saying? (Repeating it in a loud tone, he answered, "I don't know what you are talking about.")

Q. Well, we are both prisoners and that is not very nice.

A. I am not a prisoner.

Q. Well, I am, and I am here with you.

A. (In a louder voice to Lloyd) Somebody is in this office. You see what he wants and what he is talking about.

Q. Are you still at Mohawk?

A. Of course, I am.

Q. Don't you know by this time that I am aware that you realize your surroundings?

A. No answer.

Q. Who is this man beside me? (It was the guard.)

A. No answer.

Q. Feel his brass buttons, here's his officer's cap, put it in your hand. (The guard placed it there.) He then looked up and said "Oh you are George Starret, aren't you? You are on engine 432. The guard asked him, "Don't you think you have carried this bluff far enough?

A. What bluff? We just had an engine go down the river and it stuck its nose clear into the bluff. There is Walker's Bluff and there is Slate Bluff.

Q. Didn't you tell me, I. B., that you played poker?

A. Yes, when I was a boy.

Q. Do you not know what kind of a bluff I mean then?

A. No, I am telling you the kind of bluff I know.

Q. Don't you think you should realize by now that you are in jail and not at Mohawk?

A. (In a loud voice with great excitement.) I guess I know what I am and who I am and where I am. What is your business here anyhow? Tell it and get through with it and get out.

Q. You are in prison, you are not in your supposed railroad station. There are prisoners all around you. Don't you hear them?

A. There are no prisoners here. There is Lloyd here and Sam and you, whoever you are, and when Sam comes in he spits all over the floor and I have to always clean it up.

The following comprise some of the word tests given to I. S. B. and his answers. Time reactions were not made with a stop-watch:

- Air Air.
 Airplane I don't know.
 Black Why, black.
 Summer Its summer.
 Sugar Just sugar.
 Bill A lot of them in depot.
 Bank What kind of a bank? I have money in the
 First National Bank, Coshocton.
 B., that isn't quite (Hesitatingly.) Oh! yes, yes, I remember, I have
 the truth. You are money in the Loudenville Bank.
 lying to me. You
 have money in other
 banks.
 Concrete I don't know.
 Wine Don't know anything about it. Never heard
 about it.
 Pretend Anything (after some delay.)
 President McKinley. F
 Soldier We have three at Loudenville.
 Fire Why, a fire.
 San Francisco fire..... Never heard of any.
 Biggest city Ask Lloyd.
 How about New York?. Yes it's big.
 Truck There is one in the freight house. No it's not
 run by electricity. A telegraph instrument. We
 put stuff in jars.
 Carbon To make three copies at once. That is the paper
 used in our 31 orders, also in our 19 orders.
 Roses We have them in summertime.
 Arithmetic Study it.
 Justice My father was a justice of the peace.
 Dictaphone Don't know.
 Charity The Bible says if you have charity you are good.
 Sport He's over in the barn.
 Woman Just a woman.
 Loyalty Oh! I work hard for the company. That's loyalty.

- CorporationDon't know. Who are you anyhow? You know
so much. I wish you would teach me.
- ChildJust a child.
- SuitWhy, I got a suit on.
- Some other kind of a suit. I don't know any.
- Well now your father was a justice of the peace. People would go to him for certain reasons. Yes, that would be suing.
- But what is it called otherwise, the action itself? I don't know what you mean.
- Well, what are lawyer's trials called? Lloyd is studying law, ask him. He has Blackstone.
- What do you know about Blackstone? Well, Pa used to be a justice of the peace and I gave Lloyd his Blackstone.
- TrustHiram Johnson would trust me to payday. I like him, and he likes me.
- VarnishI have heard of it.
- Billy SundayDon't know. Are you Billy Sunday?
- EvangelistMoody is an evangelist.
- IrisDon't know.
- CommerceDon't know.
- Blind(He immediately started to repeat the story about the nails through his head, crying and shaking his right hand.)
- LolaShe is my wife.
- PaintIt's just paint.
- Beet sugarI don't know. I know sugar.
- BicycleI got an old bike.
- TravelTrains go to Coshocton.
- DogJust a dog.
- GrassSummertime.
- StealStole \$20.
- DemocracyDon't know.
- ArcticNo answer.
- Arctic OceanOh, yes, I know.
- PreachMake you good.
- Steam432-437 engines.
- Brick
- InterestWhat do you mean?
- Why you know what interest means. Oh! yes, I get interest at the bank.
- SunJust sun.

- Door It's just a door.
 Cow Why, it's a cow.
 Money Just what you say.
 A trade dollars I don't know what they are.
 Lamp For light. I worked awfully hard to-day. Hiram Johnson helped me. The snow was two feet deep for a long time. Perhaps two weeks we have had snow. Why, it's February. I just waded through a lot of snow by the blacksmith shop just before coming here.
 Whose picture is on a penny? I don't know.
 What picture is on paper money? There is reading on it.
 What is that garter you are fixing around your leg? Don't you know that that is a garter that was made in 1905? Oh! no, that is five years after now.
 Why do you undress at your office if you think this is your office? I didn't undress.

These tests are interesting in showing that he has no seeming memory for any new words and he hesitates or gives generally a meaning to simple words which have nothing to do with the experiences which connect him with the present situation. We failed to get, in most instances, any response to the words, bank, trust, interest, suit, and similar words dealing with the experiences for which he is held in jail. With some words he persistently took a meaning for the word which has nothing to do with what we had in mind. Notice, for instance, his answer to suit, speaking of his clothes; and upon our insisting for some other meaning, his reply, that he did not know any other meaning to the word suit, until it was recalled to him that he claimed his father had been a justice of the peace and that, therefore, he must be aware of another meaning to the word. Yet, even after acknowledging this he assumes no understanding of the word. And with other words, such as interest and bank, he always first hesitates, asking the question, what is meant by the word? He also denies any knowledge of what a corporation is or what commerce means. Yet, assuming that his mind is occupied with his experiences of 1900, he must have had at that time knowledge of these words. Note also his reaction to the word hospital. His rejoinder also to my question concerning Billy Sunday is interesting. It was, "are you Billy Sunday?" A peculiar name like this would hardly be answered in this way if the name was entirely out of memory. I repeatedly asked him

whether he heard the gong sound in the jail corridor, or the call of the guards or the noise made around him by the prisoners. He never hears, anything, however, except occasionally upon being directly addressed. "This is a waiting room, or this is a telegraph office, or there isn't any noise." My voice he always hears. He enters readily into conversation with me. He is never occupied for long with any supposed duties in connection with a telegraph office. It is always February. It is always snowing. He always speaks of Hiram Johnson or Lloyd Stats or his horse Sport, or his former trips to Mohawk and Coshocton, or messages from McKim, the dispatcher. He is very eager, in fact, to impress you with these things and to go over them repeatedly with you.

He doesn't consider it peculiar that he is helped in dressing or in getting around. He sleeps well. He never has any trouble in helping himself to eat.

To words which have come into use since 1900, we could get no response; parcel post, jitney, addressograph, censor, chiropractor, dictaphone, radio, feminist, dry-farming, etc. At the same time, as remarked before, many words which were in use in 1900 receive apparently no association in his mind. Unless the words deal with this narrow or circumscribed environment and duties connected with it, we are unable to elicit, as a rule, any answer from him.

About one month after he had been placed in jail, he commenced to have "spells." My report concerning them was received from several guards. He imagined he was raising rabbits in his cell. Upon one day he threw a chair at the cell door to kill a snake which was getting at them. Upon another day he imagined he was in the loft of a barn and threw himself out of his cell cot, making a lot of noise and yelling that he was hurt. Upon several occasions, in trying to get anything from him concerning these episodes, if the matter was pressed too far, he would get excited, call for Lloyd and start to assume that I was interrupting him from getting some telegraph messages. These hallucinatory attacks lasted a very short time. After they had been present for about one month, they gradually grew less. Early in February he had one about every third to fourth day and none occurred in the latter part of February before his removal from jail to his home. Since that time, I have had no access to him and do not know his further history. Court proceedings have been dropped.

A reading of the above history will give anyone a clue to classification, even though one would differ somewhat in the label attached. B. can be variously grouped as an hysterical dissociation, an amnesia, or as a dual personality. None of them are satisfactory. He is still I. S. B., it is true, but it is not only an I. S. B. of years ago, but an I. S. B. that never actually existed, living as he does only a single day of his life. He is acting a scene of his life.

But it is rather a circumscribed period of his life. The environment and the experiences attached are very simple. He is a railroad telegrapher. He is at his office. He telegraphs to his superintendent or receives train messages. He calls in his assistant for help. There are no other situations. He is aware of the necessity of other attachments, but he has detached his personal life from them. His family are, therefore, away from him. He wishes he could be near his wife and child. He wishes he could have some of his family with him, but they are not an active part of his present life. There could have been no period of his life exactly like the one he is enacting at present. Dispositional changes reveal also that he is acting something which is not his real personality. His voice has taken on a high-pitched, querulous note unlike the voice which he formerly had. His gait has become cramped and stiff. His steps are small. His knees never bend. His back is stooped forward. His hands are clenched. His head is stretched forward. And walking is accompanied by a gross trembling which is unrhythmical and shows on the face of it its functional nature. In other words, his attitude, his gestures and his facial expression are abnormal. They are like those often noted in hystericals. He is suggestible, but only to an extent which does not come into conflict with the part he is enacting. I am frequently one of his old acquaintances. I am not always the same one. I remain such as long as an interview lasts. My next visit to him requires a renewed acquaintance. He retains no experiences from day to day; that is, he blots out all memories of the life he is living at present. Suggestions, therefore, cannot live with him either. In any single interview, as long as I am content to act the part of some former acquaintance of his in this circumscribed environment in which he assumes to live, a well-ordered, quiet conversation ensues. Any attempts of doubt of the place and time he gives to his life are met with protest—vehement protest—accompanied at times with great excitement. He beats the table with the outer side of his clenched hand. He raises his voice and shouts: "I am I. S. B., I am in my office. I am sending messages." Physiological responses to his present situation are lacking. His skin anesthesia is complete. He is apparently deaf to his surroundings. This is definitely, however, of a functional character. He hears perfectly any one addressing him, but he

never entertains in consciousness two voices. No conversation, therefore, can be carried on by two persons with him at the same time. He is deaf to all noises and sounds of his environment. Gongs, tuning forks, and a Galton whistle were all futile in experimenting with him. He is deaf to everything which has no seeming relationship to this episode of his life which he is acting out. He carries out consistently his part of being mentally away from the present, both in time and place. He is blind also. This blindness is acted out by the obsession that he cannot see and cannot even open his eyes to see by reason of the fact that they are nailed shut. And they cannot be opened either, because the only man that can open them, a physician whom he formerly knew, lives miles away and is inaccessible. He refused to come. There is no one to go and get him. He cannot go to him either. He must wait patiently until some time when this physician can leave. It is not merely a lapsed memory. He differs from the real person who existed in 1900. He has blotted out every memory, everything of the present and the past, back to the period where he was content, ambitious and had his self-respect. This amnesia is a dissociated state seemingly. The repression of his entire life back to 1900 is accompanied apparently by interference with normal motor and sensory responses, and an independent automatic personality exists antagonistic to suggestion. The blocking of his mind in this way is indicative of a prolonged conflict in his mind between the two I. S. B.'s which actually existed together for many years. The one bent upon financial success, allowing nothing to thwart his purpose. The other, a simple, religious I. S. B., overcompensating for the obliquities of his other self. The struggle ended with the disclosure of his actions. Relief came with a monoideism—all ideas, all functions which had to do with his conflicts in life, with his experiences in life, became dissociated, carrying along with them all of his experiences back to 1900. In other words, a total amnesia occurred. We may assume that a certain type of wish fulfillment was present for a long time—the wish to be back again to his peaceful days and the knowledge that the life he was leading could not go on forever and that some day disclosure would come. He had an emotional repression, therefore, which helped when the dénoue-

ment came to bring on the present personality, which not only knows nothing of the real I. S. B. of later days, but more particularly nothing of the shame or self-reproach or of the disgrace.

The persistent desire of escape from an intolerable position became so organized mentally that it finally succeeded in blotting out 18 years of this man's life and carried with it all associations which dealt in any way with other memories except the few we have indicated above, which deal with his life as a telegrapher at the railroad office.

It has long been recognized that the dissociation of a set of experiences, whose principle setting is one of emotion, may involve, also, many other experiences in life and on the physiological side certain functions which have apparently no correlation, such as sensation, producing in this way a complete amnesia. There has resulted in this case more than an amnesia, however. For I. S. B. has resurrected the remaining memories of only one day of his life. He is continually living over the conserved experiences of that one day alone. It is always February, 1900, snowing, very cold. He is sending messages, his assistant being with him. This neurogram from his subconscious life, to use Prince's apt designation, offered to him an opportunity of escape from present conditions and he is utilizing it subconsciously. Hypnosis was impossible. Narcosis under chloroform was negative, inasmuch as he simply went to sleep under it and emerged without revealing any other memories. In addition to this, however, a definite obsession obtrudes itself, that of his shut eyes. We have here a peculiar conversion phenomenon giving evidence of the existence in his subconscious life of the hurt and misery of his position. The actual memories are blotted out, but the emotional reaction exists, shall we say, subconsciously. It is present though he is not aware of it. It remains present. He cannot remove it. "The nails cannot be taken out. The only doctor who can do it cannot be made to come." He is inaccessible to him. But hope exists subconsciously that his intolerable situation will be ameliorated. Some day he will come, that is, some day I. S. B. will get relief and all will again be well with him.

With I. S. B. there is no loss of personal identity. The change in his personality is complete enough, however, to make him seem a different individual. There is, strictly speaking, however, no

new personality evolved. In any consideration of an actual dual personality, we should find that one personality is utilizing entirely different experiences and adjusting itself by proper responses to different situations than is the other part of the individual. This variation may only have occurred once in an individual's life or may be almost daily. Inasmuch, however, as I. S. B. has lost recognition of the present and of almost all his former life, he represents a person who never really existed. He is an I. S. B. with no apparent memory of the I. S. B. that actually existed for 18 years. There is retentiveness of associations for his experiences back to 1900. One can readily recall to him and get him to talk of his life before that. There is, however, no retentiveness of anything which occurs at the present. What he does one day is blotted out the next. What he hears one day is forgotten by him the next day; and what he hears must not deal with his environment. There is no real activated person existing, therefore, at present. He is not really a personality or a self. A real self must comprise a body and mind which is undergoing experiences, further which utilizes those experiences, which can adjust itself to the varying circumstances of its environment, and which develops from these experiences and interests in life adequate psychic responses, attaching value to them as well as evaluating them for others. Such does not exist with I. S. B. Though he is not a real personality, we feel justified in speaking of him as representing more than amnesia. There exists at the present time an I. S. B. who is different from any I. S. B. who ever actually lived before, who is apparently utilizing memories of one episode of his life and reacting to them day after day. They are the conserved experiences of his former vocation. What I understand by the subconscious state is merely that those memories and experiences which are conserved in an individual's mental life can again activate his conscious life in some way or other, *i. e.*, by hypnotism, in dreams or by a change of those emotional factors which may have produced their submergence. I need hardly say that we are deviating from the conception of consciousness as a state of awareness being the fundamental concept of mental life. Psychology to-day is taking more and more into account the value of experiences for themselves alone as well as in respect to their setting. Whenever, therefore, we have a disaggregation of personal

synthesis or, in other words, whenever the conscious life of an individual is broken up, so that only a portion of what is called our subconscious mind governs our activities, as is the case with I. S. B., we have no right to consider that the rest of his experienced life has been lost; for at some other period other experiences may be revived to influence and dominate his actions in the same way as does his telegraphy experiences carried out as of a day in February, 1900. May not, even admitting a dissociation from his present environment, his present surroundings produce some memory images which later on would be revived? Nor have we the right to assume that by considering his present life to be that of a subconscious state, it is separate and independent of his conscious mind. Strictly speaking, two or more personalities never exist together in the same person, but only various phases of the one personality. It has simply become split-up and our conception of dissociation is based upon this narrower view rather than by inferring mechanisms related to our primary instincts being involved unless we can with reasonable certainty have a basis for such a conclusion.

The psychological settings which we have interpreted in this way obviously ignore some of the factual evidence of the earlier part of my narrative and which render it necessary to take up the question of whether I. S. B. is a malingerer.

A defense reaction resulting in a neurosis may have as causative mechanisms the same drive of motives which produces malingering. Both are dynamic reactions to disagreeable situations. An emotional experience always has a motor component to which we adjust ourselves consciously or unconsciously or fail to do so. The difference between malingering and a neurosis lies therefore: firstly, in that from the psychopathologic side, the reactions which produce a neurosis are accepted as in accordance with our conceptions of its causation and are not regarded as intentional ones, and on the medico-legal side the existence of a neurosis is deemed simulation unless it can be proven that an individual is not conscious of the reactions compensating in this way for an intolerable situation; and secondly, since responsibility is an ethico-legal conception, it does not or must not enter into a medical viewpoint of mental mechanisms. Nevertheless, inasmuch as the law does not entirely accept our point of view and does not accept the

factor of instinctive trends as a motor drive conflicting with a volitional motive and we are required to answer inquiries according to its viewpoint, is there a method of approach which can reconcile legal and medical conceptions? Let us review the problem of I. S. B. from this dual standpoint:

1. We may assume as true that shame, remorse and despair were present in I. S. B. and also that these emotions represent the dynamic forces which may effect a disintegration of mind. When exposure came there was no outlet for his activities, his inborn strivings and trends reached an impasse, and a breakdown resulted.

2. We may also assume that there must have been a conscious realization of this ultimate end to his activities; in other words, an anticipatory fear may also be assumed. Reasoning fear may be productive of the same reactions as an unreasoning fear state.

3. A constant conflict must have existed in the effort to keep his emotions and fear from external expression.

4. This abnormal mental attitude terminated upon the day of his exposure, resulting in a fixation of his secret desire for peace of mind and the consequent production of an antero-retrograde amnesia.

5. The actuality of his memory loss is supported by the presence of (a) anesthesia of his entire body; (b) tremors; (c) contractions of his hands; (d) a spastic-like gait; (e) a bent back; (f) a loss of awareness of his surroundings; (g) a spasm of his eyelids, with a delusion that they are closed by nails hammered through his skull; (h) hallucinatory attacks and seizures of an abortive type consisting in his fictitious rabbits being eaten by snakes, his falling from his cot with a wierd yell, etc.

Taking up the same points from a legal standpoint, our formulation of them would be about as follows:

1. If he actually was doing wrong, the admission of the presence of remorse and despair does not imply that a mental state different from that of any law breaker exists.

2. Fear of the consequences of his acts may be accepted as being present without, however, solving the problem existing.

3. Mental conflicts and defensive mobilization of one's mental resources occur with normal persons also and are not acceptable as proof of an abnormal mind without further evidence.

4. There is apparently a loss of memory and a failure to register and consequently to remember present occurrences. Nevertheless, since crime is involved, this must be proven or disproven and not be merely an opinion based upon the behavior of I. S. B. His evasion of any associations which deal with words which involve his present situation, as hospital, corporation, suit, bank, indicates disagreeable memories rather than lost ones, his indifference to articles of dress which he could not have used at the time he supposes himself to live in, his request for an automobile and his signing his name to his discharge papers, indicate that he is aware of his present situation. No evidence is offered of any previous neurosis. There is nothing in his history which indicates any instability of his nervous system. The formation of a protective mechanism which was caused by the secondary instincts of self-respect being broken down and that of ambition being thwarted is admitted. No primary instincts, however, dealing with his innate trends and which were not under his control were involved. His problem, therefore, is not different from that of every criminal, for their antisocial activities may always be construed as antagonistic to those of normal human beings. In fact, one school of abnormal psychology regards all antisocial individuals to be unduly influenced by unconscious strivings. Accepting this standard whenever crime is involved would not be a good precedent. In the case of I. S. B., therefore, his amnesia must be proven at a different bar of judgment. This is admitted by your setting up of your fifth paragraph as corroboration of this amnesia being a reality. Let us briefly consider it.

5. The corroborative symptoms which are set forth may all be simulated. A variety of hearing which hears only one voice—and generally only the voice of one who has nothing to do either with his surroundings or with the environment in which I. S. B. supposes himself to live—appeals to us as deceit. The ability to withstand any betrayal of feeling from needle-pricks and other painful stimuli may be possible. It is easy to be hurt and not show it if one is put to the test. You cannot prove either that he is taken unawares when these tests were performed, inasmuch as your very presence serves to prepare him for such an ordeal, for I. S. B. is a highly intelligent man who has studied psychology and medical methods. The attacks likewise cannot be proven to

be hallucinatory any more than that they are fabricated. And in order to evade punishment, cannot one who was an evangelist and therefore accustomed to autohypnosis suggest to himself his present gait and tremors? He eats alone without trouble and only cries out about his eyes whenever he is asked about them. Does he really, therefore, never see and constantly have a delusion about his eyes?

In the above manner, we may assume, can two viewpoints based upon the same evidence be presented. Does it suffice for physicians to stand behind our present-day principles of mental mechanisms which being based upon many observations can be adduced as confirmatory of the first viewpoint? Can we ignore the possibility of another interpretation of the facts when the question of responsibility is interjected into the argument? This is like erecting a house of straw in order to knock it down; yet a legal point of view which entered into this case rendered necessary its being taken up from this double viewpoint.

We will admit, considering I. S. B. from either standpoint, that his symptoms are purposive in origin, but whether he is aware of them and has intentionally produced them is quite a different thing. If we premise the existence of a subconscious state, we imply that dynamic forces work in our minds which we have at the start volitionally brought into being, but which are later beyond our control. In asserting that there is a specific purpose back of all mental reactions we are not at liberty to conclude that such a deterministic assumption decides that these reactions later became fixed and automatic and therefore were not simulated but involuntary. We find in his desire to escape from shame and punishment, a specific reason for his state of mind and which he has no means of alteration under present circumstances. He has made a compromise in his choice of reactions which conflicts with his former ideals of life and which therefore brings into being the physical phenomena elicited. After they are once brought into being, only a removal of their cause, which implies a removal of the fear of punishment in order that his normal trends have an outlet, can effect a change. The causes are no longer consciously volitional because the factors which produced his state are no longer active except in his submerged self. Thus reasons the psychopathologist. But many crimes are undiscovered and many

criminals evade the consequences of their acts. Deathbed confessions are not uncommon and prove this assumption, and also very few criminals when their crimes are discovered have amnesia though they have convenient lapses of memory. And even the fact that such states do occur does not nullify the necessity of proving its presence in any given instance. That hysteria is a commonplace disease (if we may call it such) is the reason that many physicians are prone to be impatient of any criticism of its presence. But the mechanisms must lie close to the surface whenever, as does happen, the symptoms are caused to disappear in a few hours even if they had been present for months. Between "free-floating" inhibitions which a person is conscious of and which we style malingering and protective mechanisms resulting from a temporary failure at adjustment to some given situation, there lies no middle ground. They are the same.

I. S. B.'s mind was a highly suggestible one, inasmuch as otherwise he could not have been a spellbinder. And if hysterical amnesia is only a form of suggestion, as some regard it, it is but a little step further to assume that a person could continuously suggest such a state if we do not introduce any conception of subconsciousness into the argument. The validity of motivation must depend upon the valuation we place upon our ratiocinations. This is just as true of the physician as of his patient and this principle of psychology leads to various persons interpreting facts differently. Ideas should be based upon facts, but just as often what are supposedly facts are based upon ideas. The desire to avoid the consequences of his business dealings, acting subconsciously, cannot therefore be invoked to prove his symptoms are those of hysteria any more than malingering can be proven by asserting that this same desire is acting, but that he is aware of it.

Implanted deeply in every normal human being is a desire to go through life with self-esteem. When one loses this trend, if its loss is likewise accompanied by fear of the consequences of one's acts, the citadel of ambition falls and striving for honor and future success ceases. There is lost not only self-respect, but also the good opinion of others. Character is the foundation stone of personality. To defend ourselves from an impairment of our self-regarding instinct is strongly entrenched in us—so strongly, that to protect it a breaking up of mental forces may be produced

and a dissociated state of mind come on to save us from the hurt entailed through the loss of this instinct and its associations. The conservation of human forces implies a threefold trend to this dissociation; endocrine, physiological and psychic, as far as our medical researches can go.

It does not really matter, therefore, from a medical standpoint, whether hysteria or malingering is present, except that it raises the question of conscious or subconscious mechanisms at work, for both are abnormal reactions. Every neurologist has had to question himself in respect to this problem in handling cases of hysteria. This is the social aspect which should loom more largely in our minds. Good imitations of hysterical gaits and tremors occur, but the very imitation, if persisted in, is proof of abnormal mental reactions; for normal persons do not stoop to such procedures and could not malingering week after week without being caught up. If we assume that even to malingering requires an over-suggestibility, or autohypnosis, there only remains the question of consciousness of the state of mind present to be considered. Since we realize that one can be made conscious of even our subconscious memories by hypnotism or be influenced to break up the mental state which produces hysterical symptoms by suggestion, the connection between malingering and hysteria is even closer.

A detailed examination of our literature, in respect to amnesia, reveals that the viewpoint of the observer influences his conclusions rather than the evidence presented by patients themselves. Janet in his writings sketches for us fragmentary amnesia: Marcelline, for instance, has an hysterical memory loss merely because she is surprised at seeing him upon his second visit to her and asks the nurse who he is. He accepts her statement and considers this amnesia therefor. It is commonplace to read of an amnesia occurring after an accident without any proof being adduced except the individual's statement. It is not surprising, therefore, that often closer investigation reveals that there is order to escape thinking of it. Even in those complete memory of the occurrence and therefore the claim of forgetfulness in order to escape thinking of it. Even in those complete memory lapses which go to make up dual personality cases, a perusal of the histories given us are unsatisfactory in this respect. Rev. Ansel Bourne could have, perhaps, acted as he did, voluntarily, in

order to escape intolerable home or pastoral surroundings and later when he decided to return to them and the opportunity was offered without loss of self-respect through hypnotism and William James, he took advantage of it. At least, the recorded account does not disprove such a possibility, except that our respect for James' opinion would not permit us to entertain such a view. Ch. W., whom I described 18 years ago, likewise, could have made up for me his "lost personality" as far as I had any proof at that time that he had been in a railroad accident and that 19 years later he awoke with a gap of that many years in his memory and commenced a new life. I mean as far as I proved the authenticity of his dual personality. This is true also of Charcot's Mme. D., the autopsychic amnesia described by Jones, the Lowell case of amnesia,—but I need not recall more of them to you. The good faith of the observer as well as of the observed person is involved. I do not doubt their honesty. I do not imply that these classical cases were fictitious, but merely that there is nothing in the recorded histories which prove their truth or with some other histories in medical literature which remove the possibility of autohypnosis on the part of the examiner as well as the patient. Lost personalities like Weir Mitchell's Miss Brown and Boris Sidis' Dr. Hanna are, however, definitely pathological types. So are the moods and simultaneously appearing other personality of Sally in Morton Prince's description of Miss Beauchamp.

In admitting, as some do, that hysterical inhibitions, especially at the lower levels of sensory and motor response, are practically of similar origin as are volitional inhibitions of any kind except in a greater degree of suggestibility, we are perilously near the lay mind's opinion of hysteria being something "put on" for the occasion. This can be sidestepped as some neurologists did in their army service by looking upon their problem as being one of getting the soldier back to the front. Whether malingerer or hysteric did not matter much if they secured by sublimization and rationalization a new initiative in the soldier and thereby effecting a "cure," which meant sending the soldier back to the front. It is, perhaps, for this reason that they regarded the neuroses of war as something different from those of peace and yet in their

analyses utilize the same basic principles of causation as are understood to be at work in the peace neuroses. The settings or *Erlebnisse* are, of course, various, but there are no differences in the mechanisms at work. Physicians are occupied, of course, as a rule, with eliciting symptoms and ignore any interpretation of the motive which may be responsible for them, though the word "morale" has become a favorite among the army neuropsychiatrists. The same conclusion I repeat again governs my point of view concerning malingering in contrast to hysteria, both being nonsocial, dynamic and dealing with submerged memories which influence the reactions of the individual. The difference lies in whether unreasoning and instinctive trends are at play as well as conative processes.

The problem of responsibility does not enter therefore into the interpretation of results, or of cause in respect to the psychoneuroses, as a rule. When it does, it is a problem which is not as easily solved as some assert. Mental mechanisms must be studied independently of this question, but nevertheless I believe I have shown that whenever deceit is premised, the influence of the factor of guilt and the evasion of punishment as a "conscious" protective mechanism must be entertained. I would recall to those who contend that malingering and hysteria can always be distinguished, the words of Babinski that intentional deception and unintentional simulation are often indistinguishable.

In dealing with intentional acts of dissimulation, we realize that our conclusions are based upon the accumulated experiences of many observations and not to accurate criteria based upon the evidence of a single case. Our bias is predetermined for us to a certain extent. Our own psyche is a history as much as is the patient's mind and the lay observer cannot enter into our experiences which make us distinguish hysteria or malingering and therefore he is unable to visualize the thought processes which have formulated our viewpoint. This does not negative the necessity for our opinions being based upon evidence which is irrefutable, concrete and factual if it is possible to have it so. This "if" looms large whenever we bring into our opinion conceptions of the unconscious strivings of a person. For our conscious motivations are always secondary to more deeply

implanted trends which often decide for us our tendencies in life. Viewed in this way, I. S. B. had working in him forces he could not control, which broke through his protective covering of "religiosity" and which deeper trend—when its protective mechanism was uncovered through exposure of the crime his true self brought him to,—again was covered over by a complete stoppage of his conscious activities and the formation of a dissociated state. The factor of exposure and consequent punishment is therefore not the beginning but the last phase of trends which had their origin far back and whose repression produced motor-laden emotions which were "carried over" into the physical phenomena described above. Here, however, cerebral physiology and abnormal psychology still speak different languages and therefore permit the erection of a controversial contra-opinion such as has been outlined above.

The questions which I have considered and which I will conclude with are:

1. The necessity for a realization that terms like amnesia, dissociation and dual personality are merely descriptive and not diagnostic.
2. The delving into psychogenetic mechanisms is commendable, but the evidence of the existence of a specific mechanism does not prove that it is the determining influence in a given patient.
3. Defence reactions and protective mechanisms are too often accepted as diagnostic explanations which they are not.
4. The instinctive trends and their unconscious reaction upon conscious motivations have not as yet explained the psychoneuroses.
5. Malingering and amnesia are essentially similar in their protective mechanism, but different in their physiological response to situational influences.
6. A closer study of emotional upheavals in respect to their connection and correlation with physiological responses, as well as instinctive trends is necessary in order to interpret behavior-patterns, such as are outlined in the history of I. S. B.

Notes and Comment.

SEVENTY-SIXTH ANNUAL MEETING OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The preliminary program for the seventy-sixth annual meeting of the Association at Cleveland, Ohio, June 1-4, which has been issued by the Secretary promises a series of sessions of much interest. It is here reproduced for the benefit of those who may not have been favored with a copy:

TUESDAY, JUNE 1, 10.00 A. M.

Organization; Address of Welcome; Reports—Committees, Council, Treasurer, Editor of Journal of Insanity; Appointment of Nominating Committee; Memorial Notices; President's Address.

TUESDAY, JUNE 1, AFTERNOON.

Administration and State Problems.

TUESDAY, JUNE 1, EVENING.

Administration and State Problems continued.

Enough papers covering this field have been promised to insure full and profitable sessions.

WEDNESDAY, JUNE 2, 10.00 A. M.

Mental Hygiene.

WEDNESDAY, JUNE 2, AFTERNOON.

Mental Hygiene.

A special effort has been made to secure a full exposition and discussion of the work now being conducted by the Mental Hygiene National Committee and its many state branches. The functions of these associations are so closely related to the duties assumed by the members of our Association that these meetings are sure to be appreciated.

WEDNESDAY, JUNE 2, EVENING.

Annual Address.

President's Reception.

THURSDAY, JUNE 3, 10.00 A. M.

Clinical Psychiatry.

Notes and Comment.

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Clinical Psychiatry.

THURSDAY, JUNE 3, AFTERNOON.

Clinical Psychiatry.

Both of these sessions will be devoted to presentation of contributions arising in the field of clinical study and observation.

THURSDAY, JUNE 3, EVENING.

Round Table Conferences.

This feature introduced at the Philadelphia meeting was so much appreciated by most of the groups that a request was made for the continuation of such meetings this year. Practically the same seating arrangements as adopted last year will be followed at the Cleveland meeting and members will be furnished at a later date with necessary information for securing their desired groupings.

The following sectional meetings are planned: (1) Administration; (2) Ladies; (3) Military; (4) Scientific; (5) Nursing; (6) Occupation Therapy.

FRIDAY, JUNE 4, 10.00 A. M.

Neuro-Pathology and allied topics.

Plans for afternoon activities are under consideration. The responses from members to requests of the Program Committee have been numerous and assure a full and successful program.

Among the important matters to be considered are the amendments to the constitution and by-laws.

It is proposed to change the name of the Association to "The American Association of Psychiatrists," and to substitute for the words "the treatment of insanity" the word "psychiatry." It is presumed that whenever the term insanity appears in the document some less objectionable word will be substituted. It may be that we are wrong and too conservative, but the fear of a word appears to us to have in some inexplicable way taken possession of some of our members. This matter was discussed long ago in the early history of the Association as we have shown elsewhere. Insanity has meant from the early days of medical history mental unsoundness or mental disorder and psychopathy sounds no better, is no less terrorizing to the lay mind and really means no more nor no less.

However, we are not attempting to forestall any action the Association may take. We trust the Program Committee will impress upon those who offer papers the regulation adopted at

the New Orleans meeting that those assigned a place on the program must present their papers when called for or have the papers excluded from the published transactions unless some valid excuse is presented. Some complaint has been directed toward the Secretary because of the tardy appearance of the volumes of transactions. Members who have complained do not realize the extreme and wholly inexcusable tardiness of some in sending in their papers for publication. Some papers presented last June have not yet been sent for publication. Surely those who have been accorded a place on the program of our meetings assume a responsibility to be present with the paper complete and ready for the printer. Our sympathy is wholly with the Secretary. We suggest the adoption of a rule that all papers read must be at once handed to the Secretary in the form the authors wish them to appear in print, and furthermore that papers which are not handed to the Secretary before the close of the meeting be excluded from publication in the *Transactions*.

SEMI-CENTENNIAL OF THE BELGIAN SOCIETY OF MENTAL MEDICINE.—The Société de Médecine Mentale de Belgique proposes to hold in Ghent on September 25-26 a Jubilee Congress to celebrate the fiftieth anniversary of its organization.

An invitation has been forwarded to the President of the American Medico-Psychological Association to send delegates to the Congress and it is to be hoped that a representative delegation will be able to attend.

The President of the Congress is Dr. Ley, Professor of Psychiatry at the University of Brussels and the Secretary Dr. Hovrey of the Colonie d'Aliénés de Lierneux, Lierneux, Belgium.

We take this occasion to congratulate the Society of Mental Medicine of Belgium upon attaining its fiftieth birthday and upon the vigor which enables it, after the terrible infliction of German invasion of its beautiful country, and the tyrannical oppression of the war to undertake the organization of a congress of psychiatrists to assist in its celebration.

We have missed from our exchange list the Bulletin of the Society which, before the war, was a welcome visitor to our library table and are glad to learn that its publication has been resumed.

The people of Belgium gained the admiration and respect of all right-thinking individuals during the war, and none more so than the members of the medical profession.

LOGOMACHY.—What we have said elsewhere regarding changes in names and the discarding of old and hitherto accepted words may have been suggested by a recent reading of a condensed report of the "Proceedings of the Ninth Annual Meeting of the Association of Medical Superintendents of American Asylums for the Insane," in the first volume of the *Asylum Journal*—now the *Journal of Mental Science*. At the meeting, held in Washington in May, 1854, Dr. Kirkbride read a paper "On the Importance of Precision and Accuracy in the Use of Terms for Insanity and Instructions for its Treatment." In this paper he objected to the use of the words "lunatic," "asylum," "retreat," "keeper" and "cell." Dr. Stribling in discussing the paper found occasion to object to the word "hospital" because in his state (Virginia), a hospital "was regarded as a resort for paupers, the outcast and friendless." Dr. Tyler said the citizens of New Hampshire, beside using the usual variety of synonyms to designate the institution under his charge called it the "Insanery"—a term which Dr. Buckwill, the editor of the *Asylum Journal*, thought a good one and resembling the English word infirmary. The editor considered the discussion similar to many which had occurred in England, and thought the objections to words so well rooted in the language as lunatic and asylum futile if not frivolous. The term asylum he considered "sacred," "signifying a sanctuary, a refuge from the spoiler." Hospital, he said, according to its primary use ought to be restricted to charitable institutions and no more signifies a place for treatment of disease than asylum does. He cited some schools which were called hospitals. The etymology of "lunatic" is, he said, doubtless based upon a foolish notion of our forefathers, but contended if we are to object to words for this reason a new language will have to be constructed. "What would be thought," he exclaims, "of members of the Medico-Chirurgical or the Royal Societies if they gravely proposed to discontinue the use of the word artery, because it was founded on the erroneous belief that these vessels contained air."

And so the objections which were urged in 1854 have perhaps found their echo, as we intimated, to-day. Lunatic and asylum and keeper and cell are terms either wholly abandoned or seldom used in medical phraseology, and it may come to pass that "insane" and "insanity" will find a like fate. Whether Greek compounds or other terms which are urged will take their place, and whether in time these in turn will be displaced by other terms remains for the future to disclose.

After all we must remember the statement of England's great lexicographer that "words are the daughters of earth and that things are the sons of heaven," and pray that they may be so united that the word and the thing shall be in blest unison blended—and the word be an apt and illuminating designation of the thing.

THE DEATH OF DR. SOUTHARD.—The members who attend the meeting next June will miss the presence of one who has always added much not only to the scientific work of the Association but to the social features of our annual gatherings.

Dr. Southard who presided over our sessions in Philadelphia in June, 1919, died after a very brief illness of pneumonia, in New York City, on the eighth of February last. He was in attendance at the annual meeting of the National Committee for Mental Hygiene and the Conference of Mental Hygiene Societies, before which he gave an address on Wednesday evening, February 5. Those who saw him then and on Thursday, as we had the pleasure of doing, were much shocked to read on Monday following, the press dispatches announcing his death.

We publish elsewhere a memorial notice of Dr. Southard from the pen of his friend and associate Dr. James V. May.

To his family, his colleagues, the institution whose scientific work he directed and the great university in which he so ably taught, we extend our sincere sympathy in their irreparable loss.

THE DEATH OF DR. MERCIER.—In the death of Dr. Charles H. Mercier, which occurred on September 2, 1919, Great Britain has lost one of the most interesting, and at the same time, one of the most brilliant psychiatrists of the times. Dr. Mercier's death has, according to the editors of the *Journal of Mental Science*, to the pages of which he was a frequent and valued contributor, "created

a vacancy in the intellectual world which can never be filled." Mercier was the author of several works. His "Text Book of Insanity and Other Mental Diseases" passed through the second edition in 1914. Ten years or more ago he published a work on "Criminal Responsibility" and last year a book entitled "Crime and Criminals Being the Jurisprudence of Crime, Medical Biological and Psychological" appeared from his pen. He also published a work entitled "A New Logic."

He was always a controversial writer and speaker and his keen analysis of his opponents' arguments, sometimes accompanied by a tinge of sarcasm, made him an opponent not always pleasant to cope with.

Under all his somewhat peculiar personality he had very many traits which attracted a wide circle of friends. And those, even who could not always agree with him were quick to recognize the breadth and depth of his learning.

For several years he had been a patient sufferer from an incurable malady, but he continued to work and to write—and though nearly blind and quite deaf for many months, had in mind another work which he wrote about bringing out, only a few weeks before his death. Those who have had the pleasure of knowing Mercier can never forget him.

Book Reviews.

Fun in a Doctor's Life. By SHOBAL VAIL CLEVINGER, M. D. Being the Adventures of an American Don Quixote, etc. (Atlantic City, N. J.: Evolution Publishing Co., 1909.)

The Don Quixote of Psychiatry. By VICTOR ROBINSON. (New York: The Historico-Medical Press, 1919.)

The subject of these two books is the same; viz. the eccentric individual, Shobal Vail Clevenger, M. D., a scientist, who gave himself to neurology and psychiatry with genius and enthusiasm, but through misfortunes in his environment and instability in himself—or (as Spitzka wrote of him) through “the versatility which is the curse of genius,” he failed of the distinction his talents seemed to promise. He is himself the author of the first of the above-named books, while to the second is appended the name of Dr. Victor Robinson, although the authorship of this latter book belongs evidently to both and there is little to show the share of each respectively in the matter presented. Both books are written in a flippant, sketchy, but often entertaining style. Our notice of the books relates to some points that we trust may have interest for readers of the JOURNAL.

Shobal Vail Clevenger was born in 1843 in Florence, Italy. He was the son of an American sculptor who executed busts of Henry Clay, Daniel Webster,¹ Edward Everett, Washington Allston,² and other great Americans and went to Florence to perfect himself in his art. He died of tuberculosis on shipboard on his way home and was buried in the Atlantic. The boy had a variegated western life. He served in the Civil War, enlisting from Missouri as a private, was breveted a lieutenant colonel “for services in the battle of Nashville”; though the appointment was never ratified and he left the service as a first lieutenant. He had a natural bent for science, educating himself sufficiently to become a surveyor, a weather observer for the government, a telegraph line builder, justice of peace, inventor, etc., all of which functions he practiced in the wild and unsettled northwest. He later took up medicine, graduating when 37 years of age from the Chicago Medical College.

The first book, “Fun in a Doctor's Life,” is an autobiography in the form of “short, readable stories and essays,” very disconnected, written in a crude literary style and yet witty and entertaining in spots. The effect produced, as a whole, is melancholy rather than funny.

Shortly after graduation in medicine, Dr. Clevenger was appointed pathologist at Cook County Asylum. His appointment, so he states, was secured through his introduction to the political “boss,” Mike McDonald,

¹ The Webster bust is in N. Y. Metropolitan Museum.

² In the Boston Athenaeum.

in a saloon. The chapter "Medicine under King Mike" is a veritable *chronique scandaleuse* of shameless political corruption. Clevenger entered with enthusiasm on his work in psychiatry and neuropathology and we may well believe he would have done well from a scientific standpoint, could he have had the support of his superiors, for he possessed unusual talent and brilliant powers of observation.

His friend, E. C. Spitzka, wrote him, "You have all the separate materials for an original investigator. . . . The great desideratum is that these separate materials be properly associated. You have suggestiveness enough for a dozen and not facts enough for one." In another place, Spitzka writes, "Dr. Clevenger is a very enthusiastic worker, who, if his other engagements will permit him to stick to researches he has started on, will undoubtedly accomplish good results." It is evident that Clevenger suffered from what Spitzka calls, "The versatility which is the curse of genius." He entered the field of biology and neurology in a brilliant manner, but the power of "carrying on" to a complete result seemed to have been denied him, or "the Fates" were against him. He appealed in vain for equipment and apparatus needful for his studies to those in charge above him, but they were callous to his appeals. In his "Fun in a Doctor's Life" he gives glimpses of the infamy and corruption prevailing in this so-called "charitable" institution whose warden openly conducted orgies in the asylum; bringing political hangers-on and women of low character to be entertained at champagne suppers, serving food to the patients unfit for lower animals, denying milk to the sick and feeding it to pet dogs. Clevenger's laudable ambitions and efforts at systematic work were baffled. After a time James G. Kiernan was appointed superintendent and labored with Clevenger to make scientific progress and to secure humane management, but they incurred the enmity of ringsters. Kiernan was assaulted and viciously beaten so that he was confined to his bed for days and Clevenger had a shot fired into the room where he was sitting with his wife and daughter which lodged in the leaves of a book on his library shelf. This attack followed an "Appeal to Physicians" which he had published in a Chicago daily, setting forth the abuses and corruption of political management. This happened in 1884. Doctor Clevenger resigned his position, having become convinced that he could accomplish nothing in the way of medical or political reform. The book hardly does justice to Dr. Kiernan: Clevenger calls him "an impractical man," but his services were recognized as able by the profession. He incurred enmity by endeavoring to shut off the illegitimate liquor supply and establishing rules for better care of the patients.

In 1893, when John P. Altgeld became governor of Illinois (the first Democratic governor for more than 30 years), he appointed Dr. Clevenger superintendent of the hospital at Kankakee.⁸ In relating his appointment,

⁸ The writer is informed that the position at Kankakee was first offered to Dr. James G. Kiernan, but Kiernan declined giving the reason that displacing the Superintendent then in charge would be "a fatal blow to civil service."

he describes the hospital in what would almost pass for "Whitmanesque" free verse,

"The largest institution of the kind in Illinois.
And second largest in the United States.
Forty acres covered with buildings.
Eight hundred acres under cultivation.
Herds of cattle.
The board of trustees, etc."

Dr. Clevenger appears to have been bewildered from the first by the magnitude of his position and his task. He gives a list of the medical staff with facsimiles of their autographs. Among the names given is that of Dr. Delia E. Howe. He states "he was glad to find Dr. Delia E. Howe at Kankakee." Dr. Howe had not been at Kankakee for years. He seems to have confounded her name with that of another woman physician who was really on the staff when he arrived, Dr. Annie Burnet, who, though urged by Dr. Clevenger to remain, insisted upon resigning—as a protest against the forced retirement of the superintendent who had served fourteen years and built up the hospital from its inception.

Dr. Clevenger also mentions with pride the appointment of Dr. Adolf Meyer as pathologist at Kankakee, but forgets apparently that the superintendent whom he replaced, when taking leave, called his attention to the application of Dr. Meyer (then on file, with the endorsement of Dr. Ludwig Hektoen); and earnestly added his own recommendation that Dr. Meyer be engaged.

Referring to Governor Altgeld, his sponsor, Dr. Clevenger in his newborn enthusiasm again "drops into poetry" quoting from the "Spoon River Authology" as follows:

"Tell me, was ALTGELD elected Governor?
* * * * *
For when I saw him
And took his hand,
The child-like blueness of his eyes
Moved me to tears,
And there was an air of eternity about him,
Like the cold, clear, light that rests at dawn
On the hills."

It may be said of Governor Altgeld that he was really desirous of honest and efficient administration, although he was accused by many of seeking to build up a political "machine." His methods at any rate could not fail to bring disastrous results. The men to whom he gave power at Kankakee were actuated by personal motives rather than desire for public welfare. One of them, a member of the legislature, Free P. Morris, largely dictated the appointments. Of Morris, Clevenger says, "He was a rascal." The three trustees also each insisted upon a personal favorite receiving appointment in the institution without regard to fitness. The Kankakee trustee, Radeke, a brewer and saloon keeper, sent his nephew

to Dr. Clevenger with a note of introduction, stating, "Any ting (*sic*) you can do that may lead to his fourture wilfare (*sic*) will be apriviated (*sic*) by me."

Dr. Clevenger further exclaims, "Oh, merit is a fine thing, and civil service rules have no equal, but the way to enter the Illinois Eastern Hospital for the Insane was to cultivate the acquaintance of Free P. Morris and the Board of Trustees."

His various troubles are detailed by Dr. Clevenger whose greatest difficulty was a lack of tact or *savoir faire*. He appointed a long list of specialists from Chicago for consultants but the Board nullified this. Referring to the bedevilment of the place under the new regime, Dr. Clevenger states that on visiting days "crowds of idlers, troops of excursionists, giggling and babbling visitors, curious for a new sensation, came to the institution." To reform this abuse he sought to have all visitors sign their names in a register provided for that purpose; this was found impracticable and considered autocratic, it produced a great disturbance: "The employees were ready to mutiny. The strangers cursed the autocrat."

Another quotation: "There was one day that especially annoyed Clevenger—the Sabbath. Every summer day the street cars would be seen filled with passengers bound for Radeke's beer saloon and then the hospital. Excursions to Kankakee and the Insane Hospital were advertised by the railroads. . . . The grounds were overrun with pleasure-seekers who often sauntered along close to the open windows and conversed with the patients, sometimes jibing them and otherwise behaving improperly."

Dr. Clevenger issued a printed circular of information for visitors of which the book says, "This four-page leaflet exhibits such sympathy for the insane and breathes such determination to save them from insult and injury that it reads like a chapter from the heart of Pinel."

Clevenger soon learned what it meant to antagonize political henchmen, of the pot-house variety. His experience in the Cook County Asylum and his heated imagination made him needlessly fear assaults and suspect villany quite gratuitously. He shut himself in his house, kept the blinds drawn in the daytime, perhaps fearing a bullet would be sent through as had happened at Cook County Asylum. At night he had the railroad switch patrolled, by men with lanterns imagining property would be removed by the railroad company to discredit him. He was sleepless and really ill. Matters went on until June 3d when the Board of Trustees issued a notice as follows: That they considered it advisable "to give him (Dr. Clevenger) a vacation during which time the Board assumes absolute control." Later, the period of relief was made permanent and this was the end of Clevenger's term of office. It began April 1 and ended July 13, 1893. On this subject the language of the book is as follows, "It was an awful fizzle; ousted after three months and nothing accomplished."

The book has many points of interest, especially the letters of Spitzka, which show a fine spirit of brotherly regard for Clevenger and also give interesting glimpses of his own work. There were many instances in which Clevenger came in contact with noted men in the biological and

neurological world, among these Jos. Leidy, William Pepper, and Burt G. Wilder.

Clevenger was a contributor to various medical and scientific journals of a great number of papers, some of which possessed real value and all were marked by the ingenuity and versatility which Spitzka called "the curse of genius." In the *Journal of Nervous and Mental Diseases* founded in the early seventies by J. S. Jewell in Chicago (now published in N. Y.); Clevenger in '79 published an article of great merit "Cerebral Topography" and in it he was the first to describe the *Sulcus Occipitalis longitudinalis inferior* which Prof. Wilder afterward named "Clevenger's Fissure" conferring an unusual honor upon a recent graduate in medicine.

Clevenger was naturally of a polemical turn of mind. The *gaudium certaminis* was his; he preferred criticism to the language of compliment and his frankness injured his own cause at times. He attacked the text book of Beard and Rockwell, "Medical Electricity," censuring Beard (who was really anticipated by Van Deusen in describing "neurasthenia") whom he accused of "voluminous nonsense" and of "show, pretense, glitter and owliness. Clevenger's contribution to *Science* of an article on "Love and Hunger," in which he attempted to treat of love as only another form of appetite analogous to the appetite for food, attracted much attention and caused much discussion. He was full of Darwinian and Spencerian evolutionary ideas and very ingenious in presenting them. In 1884, Clevenger published in *The American Naturalist* a paper on "The Disadvantages of the Upright Position" full of impressive thought and suggestiveness much of which was original. In this connection, his research on the valves of the veins occurs. He showed that the animal on all fours derived advantage while in the upright position the valves were less useful. Clevenger published a book on "Spinal Concussion" which was an element in the controversy over "traumatic neuroses." It won at any rate a commendatory letter from the veteran British Surgeon Erickson the creator; so to speak; of the "Railway Spine. Many other books and essays of varying merit were published by our author, to some of which the comment would apply: "we write too much." This is a remark once made to Clevenger by Osler.

Space is lacking for further comment on much that is interesting in these curious books. In the "Don Quixote" book a good deal of the writing in the chapters, "The Philadelphia Group" and "Friends in New York" is only very remotely connected with our "Don Quixote" though interesting in itself. The book is very frank in its statement of the faults and failings of this interesting character. They were largely those of temperament.

Finally, comparing great things with small, knowing that the "Knight of the rueful countenance" never saw success, yet was instrumental in great progress and reform; so the "Don Quixote of Psychiatry" contributed a share toward the bringing about of a better day and the evils which he attacked are slowly yielding to the greater enlightenment of the present.

R. D.

Bulletin of Iowa Institutions (Under the Board of Control). (Published quarterly. Volume XX. 1918.)

The Board of Control of Iowa for many years has wisely held quarterly conferences with the executive officers of the institutions under its supervision. This volume contains reports of these meetings together with the papers read. As may easily be imagined, these are more general in character than are usually read at medical meetings. Naturally, a number are upon administrative questions, but the majority are upon medical subjects. It would be a very wise man who could not find something stimulating among these papers, and their preservation in this form is commendable.

W. R. D.

Third Annual Report of the Massachusetts Commission on Mental Diseases of the Commonwealth of Massachusetts for the Year Ending November 30, 1918. (Boston: Wright & Patter Printing Co., State Printers, 1919.)

Confronted with many interesting items in this book it is difficult to select those of paramount importance. The effect of the war, the consequent high cost of supplies, and the influenza epidemic, are all subject to comment. In all of the institutions under the commission there were 3631 cases of influenza, of which 568 were among employees. There were 542 cases of pneumonia, of which 92 were among employees. There were 107 deaths from influenza (6 employees) and 310 from pneumonia (28 employees). So many patients lead sheltered lives, not exposed to contagion, that a different ratio might have been expected. Thirty-five physicians and 115 nurses and attendants were in military or naval service. On account of the high cost of building construction the commission has postponed any further development of the proposed Metropolitan Hospital on the site purchased in 1915, and "believes that it is far more economical to the state to develop the Boston State Hospital to its maximum capacity." Preliminary work has been continued on the proposed school for feeble-minded at Belchertown. A great deal of information is contained in the book.

W. R. D.

Index-Catalogue of the Library of the Surgeon General's Office, United States Army. Authors and Subjects. Third Series, Vol. I, A-Army. (Washington: Government Printing Office, 1918.)

This first volume of the new series is similar to its predecessors in form and arrangement, excepting that pamphlet reprints are omitted from the bibliographies of authors because they have already been indexed in current periodicals. The total number of subject titles already listed in these volumes is 1,186,271 journal articles, and 309,499 books. The Index-Catalogue is of inestimable value to those engaged in medical research.

W. R. D.

Obituary.

DR. ELMER ERNEST SOUTHARD.

Dr. Elmer Ernest Southard died in New York City on February 8, 1920, after an illness of a few days incurred while attending the annual meeting of the National Committee for Mental Hygiene. His numerous friends and admirers paid an unusual tribute to his memory in a memorial service held at Appleton Chapel, Harvard University, on February 12.

Dr. Southard was born in Boston on July 28, 1876. He received his degree of A. B. from Harvard University in 1897 and was graduated from the medical department in 1901. He received the degree of A. M. from his alma mater in 1902. After graduation he spent some time studying in Frankfort and at the University of Heidelberg. Dr. Southard was married on June 27, 1906, to Dr. Mabel Fletcher Austin, who survives him with their three children. He served as an interne in pathology at the Boston City Hospital from 1901 to 1903, and as assistant visiting pathologist in 1904-5. He was appointed instructor in neuropathology at the Harvard Medical School in 1904 and became an assistant professor in 1906. He has been the Bullard professor of neuropathology since 1909.

Dr. Southard began his state hospital career as an assistant physician and pathologist at the Danvers State Hospital in 1906. He was appointed pathologist to the Massachusetts State Board of Insanity in 1909. The work which brought him into prominence was done very largely at the Psychopathic Department of the Boston State Hospital, of which he became the director in 1912, when the institution was opened. He held this position until May, 1919, when he became the director of the Massachusetts State Psychiatric Institute at the time of its establishment by the Commission on Mental Diseases.

Dr. Southard was assistant editor of the *Journal of Nervous and Mental Diseases*, the *Psychiatric Bulletin* and the *Journal of Clinical Laboratory Medicine*. He was a member of the Ameri-

can Academy of Arts and Sciences, American Medical Association, American Medico-Psychological Association, American Neurological Association, American Association of Pathologists, and many other scientific societies. He was chairman of the Section for Nervous and Mental Diseases of the American Medical Association, was president of the American Medico-Psychological Association during 1919, and was elected president of the Boston Society of Neurology and Psychiatry just before his death. His contributions to medical literature were numerous. The better known of these perhaps were his work on Neurosyphilis and his recently published book on Shell Shock and other neuropsychiatric conditions which became of so much importance during the late war. Dr. Southard gave up all of his activities in Boston in 1918, when he accepted a commission in the army and served for a time as major in the Chemical Warfare Service. He was an active member of the St. Botolph and Boston City clubs and belonged to the Delta Upsilon Fraternity. Since the time of his appointment to Harvard University his home has been in Cambridge.

Dr. Southard was an active and interested member in all of the medical organizations with which he has been associated. As the director of the psychopathic Department of the Boston State Hospital he attracted students from all parts of the United States, and associated with himself men who have subsequently become teachers of psychiatry in many other places. Although originally a pathologist, his prominence in the profession has been primarily that of a clinician and a teacher. Largely as a result of his work, psychiatric social service has received the general recognition which it so thoroughly deserved. He was also very largely responsible for the out-patient treatment of the milder forms of mental diseases not necessarily requiring commitment to a hospital for the insane. His studies of Syphilis of the Nervous System have been most exhaustive and attracted general attention, not only in this country but abroad. His greatest accomplishment, however, was his faculty for surrounding himself with younger men who were interested in psychiatric research and who wished to specialize in the study of mental diseases. This attracted many students to Boston and made it one of the psychiatric centers of the country. Dr.

Southard's activities were very largely responsible for the high standards attained in Massachusetts in dealing with the problem of mental diseases. At the time of his death he had just started on the development of the newly created Psychiatric Institute, which gave him a much wider field of activity and would have demonstrated the almost unlimited opportunities open to institutions of that type. His death was a loss not only to the State of Massachusetts but to the medical profession.

PROFESSOR AUGUSTO TAMBURINI.

By L. BIANCHI.

Translated by DR. T. R. PAGANELLI.

(From *Annali di Nevrologia* Anno XXXVI, Fasc. I-II.)

Professor Augusto Tamburini died July 28, 1919, after having been ill for almost a year with a severe affection of the larynx.

In his death Italy has lost one of the foremost and one of the most progressive figures in the field of psychiatry. When still young, Professor Tamburini was called to the direction of the Hospital for the Insane at Reggio Emilia, to succeed Livi, who died a young man. He at once made this institution a center of learning, and now we find its history interwoven with his glowing, and triumphal labors in this branch of medicine.

As a young man he held the chair of Psychiatry first, in the University of Pavia, and afterwards in that of Modena.

The San Lazzaro Hospital for the Insane in Reggio became through the genius of Tamburini and the assistance of its administrators what might be looked upon as a modern hospital for the treatment of mental diseases, and for many years irradiated many of the new conceptions, Italy's proud contribution to the science of psychiatry.

Many of the professors and directors of hospitals for the insane in Italy were taught at this school, where the knowledge of Professor Tamburini never failed to produce a profound impression upon his hearers, inciting to hearty and persistent endeavor to advance the cause of this science—a knowledge based not on clinical observation alone, nor on philosophical speculation, but upon experimental anatomic and anatomo-

pathologic researches. Very few scholars, indeed, of neurologic and psychiatric studies, could escape the alluring influence offered at San Lazzaro, in which institution they found abundance of advantage and a most generous hospitality. Thus a great number of youths trained at this school burst forth in what might be called the Golden Period of Psychiatry, and who to-day, most deservedly, occupy chairs in universities and on the boards of the different Hospitals for the Insane in this country.

Among the most important works of Prof. Tamburini, were the researches on the sensorial centers of the cerebral convolutions made in collaboration with Prof. Luciani. From these researches, which gave a settled order to the new localizing doctrines, and which crowned with new facts the results of minute studies of Ferrier and Hitzig, he drew the elements of fact for the theories on the genesis of hallucinations, which was a genial corollary of the localization of the sensorial functions of the cerebral convolutions.

The contribution to clinical knowledge and the anatomopathology of hydrocephalic idiotism, the original study on acromegalia, the synthesis on the physiopathology of speech, and many other works, constitute a conspicuous patrimony left by Augusto Tamburini to the science of psychiatry.

The *Revista Sperimentale di Freniatria* through the contributions of Tamburini became a properous and highly esteemed periodical. It was for many years the greatest organ on Neurology and especially Psychiatry, in Italy, largely through the efforts of Prof. Tamburini. Through this journal increased zeal in scientific work came to life in Reggio.

When he was called to Rome, Augusto Tamburini left Reggio Emilia and brought to the University of Rome the authority of his name and the glorious history of the institute that was his greatest glory; but he had no longer at his disposal the means nor the rich material which he found at San Lazzaro. And while Reggio Emilia lost, by the transference of Tamburini to Rome, the great man whose personality did so much to inspire students in the study of mental disturbances, Tamburini, himself, lost by this change the wealth of scientific material in the midst of which he had lived, and from which he had known how to draw encouraging results both for the science and clinical teaching.

The University of Rome was for him more of a place of rest after the great labors performed in other times and in other places; nevertheless he always held in high honor the teaching in the Roman chair of Psychiatry, and also exerted himself in social work of which he was an enthusiastic advocate. I shall recall only the splendid work he did in the fight against tuberculosis.

In one of the preceding numbers of the *Annali di Neurologia* I spoke of his magnificent work on the assistance of the insane in Italy, published in collaboration with Professors Ferrara and Antonini. This was issued a few months after he died. The laborious researches of Augusto Tamburini make a shining figure in the history of Italian Psychiatry.

To the memory and genius of this estimable man I wish to express my deepest admiration—for his loss my profound sorrow, and to his children and his forsaken wife—who was a worthy mate—the heartfelt condolence of a work-mate and very dear friend of the illustrious deceased.

DR. LEONARD CHARLES MEAD

Leonard Charles Mead, M. D., LL. D., was born on the family homestead in Hampden Township, Columbia County, Wisconsin, January 18, 1856—the son of Ezra and Sylvia (Barber) Mead.

Dr. Mead spent his early years on his father's farm, after the manner of most farmer boys of that time, helping in the fields in summer and attending the district school in the winter time. He was enabled to complete the high school course at Columbus, and then entered the State University at Madison, where he attended from 1874-76, intending to take up mechanical engineering as a profession. He defrayed his expenses by teaching school, at first in country schools, but later becoming principal of the schools at Rio, Wisconsin. In the fall of 1878 he entered Rush Medical College of Chicago, from which he graduated in the spring of 1881.

After graduation Dr. Mead established himself in practice at Good Thunder, Minnesota, but a year later removed to Elk Point, South Dakota, where he practiced for eight years. On May 5,

1890, he was appointed assistant superintendent to the South Dakota Hospital for the Insane at Yankton, South Dakota, and one year later was promoted to the superintendency. Up to this date, May, 1891, the hospital had been a political football, kicked about to reward political services, and for a long time had averaged one superintendent per year, the work inaugurated by one being sure to be undone by his successor. It was Dr. Mead's first business to organize the institution upon a business and professional basis and lift it from the degrading domain of party politics. He possessed superb executive ability and the happy faculty of directing the movement of the large number of employees and officers without friction.

Dr. Mead was equally successful as a business man as he was as physician and executive, and was especially fertile in mechanical engineering. During his administration he planned and directed the construction of the institution as it is to-day with the exception of the old main building. He was a pioneer in concrete construction, having planned and erected one of the first reinforced concrete buildings west of Chicago. He recognized and emphasized the value of occupation not only as a therapeutic measure but as a means of developing chronic custodial cases into useful members of the hospital community.

He took a keen and active interest in the establishment and planning of the Watertown State Hospital, work on which was begun late last fall.

Dr. Mead was a man of force; his friends were legion. He possessed a most engaging personality, was a brilliant conversationalist, and his influence was impressed on all who came in contact with him. In his death the state has lost one of its most able citizens, the insane one of its most earnest champions and his associates one of their truest friends. I count myself fortunate in having been associated with him both as friend and colleague for nearly twenty years.

He was married in June, 1886, to Miss Matilda Frazer Gardener, of Sparta, Wisconsin, who survives him and who was his constant inspiration during his long and faithful professional and public service.

As a fitting recognition of distinguished work and services to the state the University of South Dakota conferred upon him the degree of Doctor of Laws in May, 1918. Dr. Mead was for many years a trustee of Yankton College, and a Mason of the 33d degree. He was also an active member of the Yankton District Medical Society; the South Dakota Medical Association (president, 1907); fellow of the American Medical Association, and Sioux Valley Medical Society. He has been a member of the American Medico-Psychological Association since 1893.

The last two years of his life proved his patience and forbearance during his long illness. For more than a year he had been confined to his apartments the greater part of the time, and during the last three months was confined to his bed.

His interest in the institution was especially keen during his last illness, and he continued to direct the policies of the institution which he served so long and well until the last day of his life. The end came January 13, 1920, at 9.30 p. m. He was laid at rest January 17, 1920, on the hospital grounds, according to his expressed wish.

G. S. ADAMS.

Half-Yearly Summary.

ALABAMA.—*Bryce Hospital, Tuscaloosa.*—One hundred and eight acres of farm land about two miles from the hospital has been purchased as a site for the Home for Feeble-minded to be established as a subsidiary and auxiliary institution. Despite the present high cost of labor and building material it is expected to begin construction during the present year.

While there are but a third of the former number of male attendants, satisfactory service has been secured by placing women attendants on about half of the wards for men. The only difficulty is in carrying on the various industries of the farm, garden, and general outside work with so few male attendants.

CONNECTICUT.—The annual meeting of the Connecticut Society for Mental Hygiene was held in New Haven on December 15, 1919. The society now conducts clinics in New Haven, Waterbury, and Hartford. The medical director, Dr. W. B. Terhune, has been appointed Director of the Division of Mental Hygiene, recently established by the Connecticut Department of Health. This is the first of its kind in this country.

INDIANA.—The Indiana Society for Mental Hygiene held a conference in Indianapolis on December 15, 1919. President William Lowe Bryan, of Indiana University, was elected president; Mr. Z. T. Fitzgibbon, vice-president; Mr. Paul Kirby, secretary; and Mr. Edward Wollen, treasurer. Dr. S. E. Smith was elected to the executive committee.

IOWA.—*State Inebriate Hospital, Knoxville.*—This hospital was closed December 1, 1919, as there were but 11 patients.

MARYLAND.—Fire on November 27, 1919, destroyed McCoy Hall in which were the offices of the Maryland Society for Mental Hygiene. The records were unharmed. A conference was held by the society November 19-20, 1919, on the general subject of Modern Psychology applied to the Classroom. Dr. Edward N. Brush, the president, presided at the first session, and Dr. Adolf Meyer was one of the speakers.

A special ward for the treatment of patients suffering from war neuroses and mental disorders has been opened at the Marine Hospital.

—*Spring Grove State Hospital, Catonsville.*—Arrangements have been made with the United States Public Health Service to use the new psychiatric wards for the care of patients under that service.

—*Sheppard and Enoch Pratt Hospital, Towson.*—On September 1, 1919, Dr. Edward N. Brush, who since the opening of the hospital has been its Physician-in-Chief and Medical Superintendent, presented his resignation to take effect January 1, 1920, or whenever his successor was elected. This was accepted by the Trustees on September 29, and the following is a portion of the minute of the Board which was transmitted to Dr. Brush:

"The Board is most mindful of the whole-hearted and unselfish service which you have always given the institution and through it the public, for a period of almost three decades, and knows that the feeling of good-will which has existed between you and it will not be interrupted by reason of your retirement from the superintendency of an institution which through your splendid efforts has achieved a nation-wide reputation for its success in the treatment of the mentally afflicted."

Dr. Brush was appointed Medical Superintendent Emeritus on February 24, 1920.

Dr. Ross McC. Chapman, of St. Elizabeth's Hospital, has been elected Medical Superintendent and will assume charge April 1, 1920, until which date Dr. Brush continues in charge.

Miss Edna M. Obenchain, R. N., a graduate of the hospital's training school of 1915, who served for two years in France, assumed the duties of Superintendent of Nurses on March 1, 1920, succeeding Mrs. G. F. Sargent, who resigned February 1, 1920.

MASSACHUSETTS.—Dr. George M. Kline, Commissioner of the Department of Mental Diseases of the Commonwealth of Massachusetts, has written that the paragraph on page 245 of the October, 1919, *JOURNAL*, is erroneous, almost entirely. The following is quoted from his letter:

"In accordance with the constitutional amendment it was necessary that all departments, boards and commissions be consolidated into not more than 20 departments. One of these 20 departments is the Department of Mental Diseases, which in no way is a division of the Department of Public Health. As a matter of fact, the Commission on Mental Diseases was the one department that suffered no change, except in name, and the title of the director giving way to commissioner. The Department of Mental Diseases was given control and supervision of the Norfolk State Hospital as stated.

"An endeavor was made to have all state institutions—penal, charitable, and mental—consolidated into one department of institutions. This, however, was not done."

—*Danvers State Hospital.*—Considerable difficulty has been experienced in carrying on the work of the hospital on account of shortage of officers and employees. The quota of physicians is 10. During the past year the highest number has been six, and at one time there were but two, besides the superintendent.

The shortage of nurses and attendants on the female service amounted at times to 40 per cent of the normal.

Undergraduates of Johns Hopkins Medical School and the Women's Medical College of Pennsylvania were accepted, as in former years, as student internes. As usual, they proved of very great assistance. They brought a spirit of eager inquiry and intense interest into conference and clinic which enlivened the ordinary routine of work. Under the direction of members of the regular staff they accomplished a great deal of valuable clinical and laboratory work.

As a routine, all patients receive immunizing doses of typhoid vaccine. Vaccination for smallpox was begun in all cases on account of the prevalence of the disease in neighboring states. A surprisingly large number of patients developed typical vaccination pustules, the percentage of "takes" running from 80 to 90 per cent in the various wards. A Wassermann test of the blood is made in all cases, and when the serum is positive or the history or clinical symptoms indicate syphilis of the nervous system, the spinal fluid is examined by various tests. In all cases of syphilis, unless contra-indicated by other organic conditions, treatment is given.

During the year 97 patients have undergone treatment for syphilis. Twelve of these were not neurosyphilitic cases, but gave positive serum tests—the others showing characteristic changes in the spinal fluid. The cases under treatment were classified, according to diagnosis, as follows:

General paralysis	70
Cerebrospinal syphilis	8
Other forms of neurosyphilis	7
Mental deficiency	3
Congenital psychopathic inferiority	1
Dementia præcox	3
Manic-depressive	1
Psychoneurosis	1
Chronic alcoholic hallucinosis	2
Epilepsy	1

These cases were given 584 administrations of arsenical preparations (salvarsan 100, diarsenol 121, arsphenamine 363), 590 intramuscular administrations of gray oil, besides potassium iodide internally. The Swift-Ellis treatment was administered in five cases.

The results obtained in the cases of syphilis of the nervous system indicate the possibilities of improvement in such conditions by early and systematic treatment. Of the cases diagnosed as general paralysis, 30 per cent showed improvement or amelioration of symptoms sufficiently marked in most instances to constitute a remission in the sense of restoration of orderly conduct, judgment, and, to all appearance, insight. Deterioration, according to the ordinary course of the disease occurred in 21 per cent of the cases, while 18 per cent showed no apparent change. Of the total cases of this type under treatment 24 per cent died.

During the year 1500 hydrotherapeutic baths were prescribed, 214 general and local massage treatments, and 1060 packs for therapeutic purposes.

Intravenous saline infusions were administered in a number of cases showing toxic features with fairly satisfactory results.

The continuous baths have been used freely in all cases where indicated, with excellent results.

Distinct progress has been made along the lines of re-education and occupation therapy. Habit-forming classes were begun among the male and female demented or untidy cases. Between 75 and 80 patients of this type, selected by the physicians on each service, are daily in training in rooms on the fourth floor under the occupation instructor, aided by nurses and attendants. The treatment is administered under medical supervision and advice, the objects sought being to arouse interest and confidence, overcome functional disability and re-establish capacity for social usefulness. To overcome the tendency to lapse into idle indifference or untidy habits on the wards, games, music by victrolas, and simple occupations have been introduced on the wards, and a regular schedule made for taking patients to the water sections. There has been a marked improvement in the habits of the more backward patients under the régime. The practical value of such efforts from the standpoint of economy is seen in the fact that the amount of laundry sent out from these wards has been reduced from four to one and one-half sacks daily. Over 300 patients have been under training in these classes.

In the occupational center, or arts and crafts room, a large number of patients, a considerable proportion of whom are graduates of the habit-forming classes, are instructed and employed in productive occupations, graded and regulated by order of the physician according to the individual's interest, needs and capability.

Recreational and play activities, gymnastics, calisthenics, medicine ball exercise, etc., form an important part of the daily program. It is desired that the hospital spirit of cure and restorations shall dominate the classes to the end that the treatment shall raise the mental and social level of even those who are incurable.

In order to promote social activity and readjustment among those patients whose forms of psychoses promise recovery or return to community life there was organized, during the year, a camp of Camp Fire Girls, chartered by the national organization. One of the educational workers has acted as guardian, receiving her appointment from the Home Camp. The members meet with their guardian twice weekly and spend the afternoon in calisthenic games and exercise. Usually a hike of several miles is taken, and not infrequently the members cook supper out of doors, building a camp fire and preparing their own food. Once a month, at least, a ceremonial meeting with the full ritual of the Camp Fire Girls is held, at which time honor beads are awarded for honors won by the girls. Awards depend upon work done in the wards, and for assistance in other departments of the hospital.

The camp has received a course in first aid nursing, and several members have been given honors for proficiency.

An organization, along similar lines, is under way in the male section. This will partake of the features of a quasi-military organization under the

leadership of men who have had training in military drill during the war. Much enthusiasm over the project is manifested by the patients, and membership, depending upon good conduct, is eagerly sought. Funds for uniforms have been gained by entertainments in the hospital.

From June to September A. W. Hicks, D. M. D., and O. F. Banks, D. M. D., did excellent work in general dentistry.

During the year 735 new patients were examined, of whom 149 had X-ray examination. A total of 773 prophylactic treatments were given. Under novocain, or nitrous oxid, or ether, 1656 teeth were extracted. Three hundred and ninety teeth were filled with cement or amalgam, and a total of 127 abscess treatments were made. One fractured jaw was treated, 26 dentures made, 3 dental cysts removed, and 4 roots amputated.

A modern dental chair, cuspidor, and nitrous oxid and oxygen equipment was installed during the year.

The visiting dentist, Dr. Frank H. Leslie, has continued in the service during the year.

A request has been made for the appointment of a full-term dentist to the service.

A coal trestle for the construction of which an appropriation of \$10,000 was granted by the legislature of 1918, was completed in September by the force of mechanics, aided by patients.

Concrete verandas for B and I Sections, the construction being done by the hospital force and patients, are not fully completed, the advent of cold weather stopping completion of the floors, and brick refacing. There remain the finishing of floors, putting in of grilles and door ways connecting with the wards, and facing of the outer walls. The sum granted will complete the work to this extent. The verandas are estimated to provide additional space for the accommodation of 180 patients.

Located as these additions are in the B and I Sections, where the demented and untidy cases are housed, a splendid opportunity is opened for relieving the congestion on these wards.

The force of mechanics have well under way work upon additions and alterations at the Middleton Colony, designed to accommodate 50 patients, for which an appropriation of \$8000 was granted by the legislature of 1918. It is expected that these additions will be ready for occupancy the coming summer.

This year meetings were held at intervals in the hospital, to consider with relatives and friends of patients such questions regarding mental diseases as interested them. Speakers were present at each meeting who discussed some important phase of mental disease, such as cause and treatment, the plans of mental hygiene, social service problems, re-educational work, etc. Questions were invited and answered, and every effort made to create a clearer understanding of the aims and purposes of hospital treatment. Dr. Harry C. Solomon, of the Mental Hygiene Society, and Dr. George M. Kline, Commissioner of the Department of Mental Diseases, appeared as speakers, and contributed greatly towards the success of this project for public education.

MICHIGAN.—*Kalamazoo State Hospital, Kalamazoo.*—This hospital has not recently undertaken anything new or unique in methods of treatment or administration. The last legislature has made it possible to employ social service workers, particularly to follow up discharged cases. They have also authorized out clinics, which have been conducted in connection with the hospital for the last four years. This gives the advantage of incurring whatever expense is necessary to carry on this work without depending entirely upon the counties where the clinics are held as heretofore.

Occupational therapy is being gradually extended. The Industrial Building, constructed expressly for this purpose, is crowded to capacity, and the work is now being carried on in the cottages and wards. The board of trustees has authorized and the superintendent will soon put into operation, the plan of intelligent and scientific direction of recreation and amusement.

The regular mid-summer meeting of the Joint Board of Trustees for the state hospitals for the insane in Michigan will be held at this institution July 15.

MISSOURI.—Under the direction of the National Committee for Mental Hygiene, Dr. Samuel W. Hamilton has made a survey of this state which is comprehensive and includes both insane and feeble-minded.

NEW HAMPSHIRE.—*New Hampshire School for Feeble-Minded, Laconia.*—A new brick dormitory to accommodate 100 girls was opened November 11, 1919.

NEW YORK.—The third annual convention of the mental hygiene societies of the United States was held in New York, February 4-5, 1920, under the auspices of the National Committee for Mental Hygiene in co-operation with the Mental Hygiene Committee of the State Charities Aid Association. A very interesting program was presented.

The State Hospitals Commission has formed a plan for state-wide mental clinics. Clinics have been opened in Watertown and Plattsburg.

On September 13, 1919, Governor Smith dedicated the site and broke ground for a new state hospital about six miles from Utica. An appropriation of \$2,000,000 has been granted for the construction of buildings to accommodate 3000 patients.

—*Buffalo State Hospital, Buffalo.*—The indications, at the present time, are to the effect that the legislature intends to appropriate funds in sufficient quantities to permit of much needed improvements in the hospital. It is likely that provision will be made for new boilers, coal-handling apparatus, alterations to the Administration Building, some plumbing renewals and a substantial addition to the accommodations for patients.

Two additional clinics have been established in the City of Buffalo, both in connection with the health centers maintained by the Department of Hospitals of the municipal government.

The attendance has been gratifying.

Miss Christine M. Stewart, R. N., has been appointed Principal of the School of Nursing.

The senior class of the Medical Department of the University of Buffalo attended a series of clinics at the hospital during the winter.

—*Dannemora State Hospital, Dannemora.*—It has been noticed for years that during the winter months, when it was not possible to give patients the same amount of outdoor exercise as during the summer months, that a spirit of unrest develops, and generally quarrels, which may be of a serious nature, have started at this season. A remedy has long been sought, but it was only during the past winter that a solution of the problem was found. The hospital is equipped with a large assembly hall, and it was suggested that systematic athletics be introduced during the winter months. This was done with splendid results. Basket ball, volley ball, indoor base ball, and other games of this nature were started. A basket ball team, composed of patients of the hospital, has competed successfully with many of the fast teams in this section. The morale of the patients has improved in a marked degree. Improvement has been noted particularly in many of the constitutional psychopaths, and it has been possible to return a number of them to prison as recovered from their mental trouble. It is planned, when possible, to obtain the services of an athletic director and make this a regular form of treatment for the patients.

—*Craig Colony for Epileptics, Sonyea.*—In October, 1919, the post office was re-established at the colony, thus making it no longer necessary to send four miles to Mount Morris for mail.

Oneida, the kitchen and dining room building, has been completed in the west group for males. As soon as equipment is received, two additional dormitory buildings in this group can thus be placed in use, increasing the capacity of the colony for males by 200 beds.

The colony, as all other institutions, throughout the country for some months past, has had a great shortage of nurses and attendants. It is expected that the legislature now in session will materially increase the compensation which can be paid to members of the nursing force.

A bill has been enacted, restoring the title of the colony to what it originally was, simply Craig Colony, instead of Craig Colony for Epileptics.

—*Gowanda State Homeopathic Hospital, Gowanda.*—The propagating house at the farm group has been repaired, enlarged and a new heating system installed.

The new pathological laboratory and mortuary was opened December 20, 1919.

There was recently installed at the power plant a CO₂ recorder and pyrometer. The installation of these instruments is resulting in quite a saving of coal.

—*Hudson River State Hospital, Poughkeepsie.*—A new pavilion for the care and treatment of tuberculous insane patients is nearing completion.

It will accommodate 100 female patients. The design is along modern lines and the situation is ideal, the building being located on the east side of a hill where it is protected from the prevailing winter winds. Future plans have in view the erection of a similar pavilion for the accommodation of 100 male tuberculous insane.

There have been inaugurated the services of a dental interne and a complete equipment for dental work has been established. Routine examinations of new patients are made and such work done in these and other cases as is required.

A study club composed of the medical staff has begun regular weekly sessions, each member being charged with a review of a certain psychiatric periodical and contributing to the program such abstracts and reviews as may be appropriate for the information of the club. This study club is designed to stimulate the medical interests of the staff and to enable them to keep abreast of the advances reported in the various journals which are too numerous for any one member to satisfactorily cover by his individual efforts.

—*Manhattan State Hospital, Ward's Island.*—On December 11 the naval hospital constructed on the Island by the national government during the war was completely evacuated and turned over to this hospital. The State Hospital Commission after investigation decided that the buildings would accommodate 980 patients and 130 employees. On December 22, a number of the employees were given quarters in the naval hospital buildings, thus vacating rooms on the wards which were turned over for the use of patients. Five days later 75 patients were moved into the naval hospital. Appropriations are now being asked from the state legislature to furnish and equip these buildings for the use of our patients.

December 18, Dr. Dwight S. Spellman, who had been a member of the medical staff of this hospital since 1890, was drowned in Tom's River, New Jersey. Dr. Spellman had gone to his bungalow at Tom's River with the idea of spending a few days. While skating, the ice broke and he was drowned before help could reach him. Dr. Spellman's death was a very great loss to the institution as well as a shock to his many friends who had been associated with him on the staff of this hospital.

January 11, influenza again made its appearance on the Island and during January and February a total of 109 cases developed, five of whom died, either as a result of the influenza or associated pneumonia.

At a recent conference in this hospital, Dr. Joseph S. Lawrence (Director of the Studies of the Venereal Condition, State Department of Health, agreed to furnish two social workers to investigate the syphilis problem in families of all patients admitted to this hospital suffering from either systemic syphilis or syphilis of the nervous system with the idea of determining the incidence of syphilis in the families of these patients and securing treatment for all those affected.

—*Utica State Hospital, Utica.*—A handsome laboratory and mortuary building consisting of 10 rooms has been completed and accepted by the state. It will be occupied as soon as equipment is installed.

Four 400-horsepower water-tube boilers have been installed in the central power house and have been in operation since January.

Occupational therapy has been inaugurated on comprehensive lines. Two full-time instructors are engaged in the work, and in addition to classes on the wards, two rooms have been set aside which are being provided with equipment for this work.

—*Willard State Hospital, Willard.*—The total number of beds in the hospital is 2460, and the overcrowding is 16 per cent, the official capacity being 2114. Forty men and 30 women were received on transfer from the Buffalo State Hospital, October 27; and 40 women from the Central Islip State Hospital on February 4. Influenza in epidemic form has not been prevalent among the patients this year, but there has been the usual amount of pneumonia and bronchitis in elderly patients.

There is still difficulty in obtaining employees, and at the present time there are 80 vacancies, chiefly in the ward service. A bill has been introduced in the legislature and is being supported by the commission and superintendents of the New York State Hospitals, which, if enacted into law, will provide a substantial increase in wages, particularly for nurses and attendants among whom the shortage has been the greatest, and it is expected that in time this will attract more applicants.

During the past six months extensive repairs have been made to three wards, consisting of new floors, repairs to the walls and ceilings, and painting. A new tile floor of the Welsh quarry make has been put in the kitchen at the main building (Chapin House).

NORTH DAKOTA.—*Institution for Feeble-Minded, Grafton.*—Contract has been made for the erection this summer for a new refectory building 66 by 140 feet. This will house the kitchens, bakery, cold storage and dining rooms.

The present population is 280 with a waiting list of 50.

OHIO.—The State Board of Administration has recommended the sale of the Cleveland State Hospital and the erection of a new state hospital to be erected on a farm of 1000 acres in northeast Ohio.

—*Massillon State Hospital, Massillon.*—An appropriation of \$130,000 has been granted for the erection of a new hospital building and an industrial building. The present industrial building will be converted into a cottage. These will give an additional accommodation of 130.

—*Ohio Hospital for Epileptics, Gallipolis.*—Fire on March 9, 1920, destroyed a cottage and the dancing pavilion. Twenty-five patients were in the cottage at the time, and of these eight died and two were seriously

injured. The following day the cottage was again set on fire but the incendiary was not discovered.

—*Athens State Hospital, Athens.*—A new slaughter house of brick and cement construction has been completed. Equipment, including rendering tank and feed-cooker, has been installed, making a very complete and efficient plant.

A new Moffatt water heater has been installed in the boiler house. A new direct-current generator unit will be installed in the near future.

Considerable renovation has been done during the winter. The hydrotherapy rooms have been repaired and repainted, the general dining rooms have been repainted, as well as several wards.

Plans for a new cottage for tuberculous men and women are now in the hands of the state architect: this will be of brick and cement construction. A liberal use of glass will permit plenty of sunlight. The site is ideal, being on the hilltop near the present old cottage for tuberculous women. Work will begin as soon as the weather will permit.

Mrs. C. M. McLaughlin has charge of the laboratory.

A course of six lectures in clinical psychiatry was given at the hospital during January and February for the students of psychology in the Ohio State University.

The hospital suffered a recrudescence of influenza during January and February; 90 cases in all, with four deaths. The disease was of the usual type except that only a small number of cases developed pneumonia.

—*Cleveland State Hospital, Cleveland.*—A series of mental clinics was held for the nurses of the large general hospitals, district nurses, and social service workers of this city during the winter months. Clinics are being held for indigent relatives of cases of syphilis of the nervous system, at which time salvarsan furnished by the United States Public Health Service is given without charge. Laboratory examinations are also made, without charge, for such persons.

A cottage to provide accommodations for 100 working men is now being remodeled; tile floorings are being laid in bath, toilet, and serving rooms; old flooring in the basement is being replaced; the roofing, gutters and spouting of the main building have been repaired, and all towers and windows of this building painted. Roads are to be paved, sidewalks laid, and shrubbery planted and transplanted during the spring and summer months. Two thousand feet of heavy wire fencing was erected along the front of the grounds during the fall of 1919.

—*Columbus State Hospital, Columbus.*—The three buildings of the Bureau of Juvenile Research of the State of Ohio, which have been under process of erection on the grounds of the Columbus State Hospital, have been completed and are now occupied by the Bureau. The Director is Henry H. Goddard, Ph. D., formerly of Vineland, New Jersey, and he is assisted by an efficient staff of psychoclinicians.

These grounds are at the extreme western end of the hospital grounds, facing Wheatland Ave. They consist of a cottage for boys, a cottage for girls, including a hospital unit, and an Administration Building, all located in a beautiful grove affording ample play ground.

The Bureau of Juvenile Research was re-organized under the Board of Administration in 1917 with Dr. Goddard as its head. Children coming under the jurisdiction of the Juvenile Court of the state are committed to the bureau if they show evidences of feeble-mindedness, moral delinquency, or psychoses. The commitment is a temporary one for the purpose of study and analysis. When their status has been determined they may be transferred to the Institution for Feeble-Minded, the Ohio Hospital for Epileptics, the Industrial Schools, or committed to the Child's Welfare Bureau of the Board of State Charities to be placed in homes. If psychotic they may be committed to the state hospital of the district in which they live. The bureau is equipped to care for about 75 children at one time.

Recent developments at this hospital include extensive additions to the X-ray equipment. Dental equipment has been provided for also and it is the expectation that regular dental clinics, under the auspices of the College of Dentistry of Ohio State University, will soon be in operation.

A cafeteria on the self-serve plan for employees and nurses has been installed.

OKLAHOMA.—*Central Oklahoma State Hospital, Norman.*—The following improvements are reported for the year 1919-20:

One three-story fire-proof building for women, modern in all of its improvements. Cost, \$125,000.

One \$50,000 fire-proof cottage for women, modern in every particular.

One one-story modern fire-proof cottage for men; cost, \$50,000.

Improvements to water works and sewerage, costing \$15,000.

Improvements to heat, light, ice and refrigeration plants, costing \$25,000.

Fifteen thousand dollars spent on improving the Administration Building.

For the year 1920-21, two additional \$50,000 cottages for men.

PENNSYLVANIA.—The Association of Trustees and Superintendents of State Incorporated Hospitals for the Insane and Feeble-minded of Pennsylvania met in Pittsburgh, October 17, 1919. The following officers were elected: President, Dr. Clyde R. McKinnis; Vice-President, Dr. Ralph L. Hill; Secretary, Dr. Owen Copp.

RHODE ISLAND.—*State Hospital for Mental Diseases, Howard.*—A pathological laboratory has been established at this hospital.

—*Butler Hospital, Providence.*—During the past six months the department for occupational therapy has been extended. The return of a worker from long service as reconstruction aid in the army, permits extending shop work for the men and much new occupational therapy has been organ-

ized in a special shop for that work. In addition two carpet looms have been placed in the men's convalescent ward, and ever since their introduction they have been in constant use.

In the women's occupational department there has been secured the full-time services of a graduate of the training school for nurses who has had special instruction in occupational therapy, and who acts as aid for the occupational teacher. The output from the occupational departments has been greatly increased and the benefit to patients has been most satisfactory.

During the past year a nurse from the Sayles' Memorial Hospital in Pawtucket, Rhode Island, has been sent every three months for special training, and it is hoped, very soon, to offer special training in nervous and mental diseases to nurses of the other general hospitals in the state. In addition to this there is in contemplation, for next year, a post-graduate course of six months which shall be open to all graduates of recognized training schools.

SOUTH CAROLINA.—*South Carolina State Hospital, Columbia.*—During the past six months the medical work has been conducted along the same clinical standards outlined in former reports. The medical department, which is divided into four units, is under the supervision of the medical director. A physician is in charge of each unit and he is responsible to the medical director for the care and treatment of the patients under his charge, the sanitary condition of the buildings and the discipline of the employees.

Six of the white male wards are in charge of graduate female nurses. This change has worked so successfully that it is hoped within a short while to have female nurses in charge of practically all of the male wards. Negro female attendants have been placed in charge of three of the negro male wards.

Hydrotherapy in treating disturbed cases has received much attention during the past six months. There are six continuous baths in the institution, two for the white males and four for the white females. These have been used to a considerable extent. In addition to these a number of patients are treated in hot and cold packs. The value of hydrotherapy in treating disturbed cases is frequently clearly brought out in the testimony of the patients who attribute their improvement to the quieting effect of the bath or the warm pack. About 20 patients are treated daily in one of the forms of hydrotherapy and the results have been very gratifying.

Occupational therapy as a supplement to the medical treatment of the mentally sick patients is now being used much more extensively than heretofore. Effort is made to get every patient admitted to the hospital, who is physically able to work, interested in some form of occupation. The department of occupational therapy is under the supervision of a trained instructress who has several assistants. As a result of this organized method of carrying on occupational therapy the number of patients employed has increased materially during the past six months.

Amusements and diversions continue to receive special attention. Outdoor sports, particularly baseball, have been indulged in freely. Other forms of amusement such as parties, dances, concerts, minstrel shows, etc., are given from time to time.

With reference to the improved physical condition of the hospital quite a good deal has been accomplished during the past six months. During this period the work has been confined to the remodeling of the white female wards and it is expected that within a few weeks this entire service will be completed and ready for occupancy.

Remodeling these wards means that they are made into new apartments, there is nothing left of the old except the brick frame of the main building. The entire interior is new. The wards are especially designed for meeting modern requirements for caring for mentally sick patients. They are well ventilated, attractive and comfortable. The work of remodeling is a continuation of the program of development and repair begun in 1915. Since that time the entire white male and white female services have been remodeled.

CANADA.—The Canadian National Committee for Mental Hygiene has conducted surveys in British Columbia, Manitoba, and Guelph, Ontario. Requests for surveys have been received from the provinces of Alberta and New Brunswick, and the cities of Fort William and Port Arthur, Ont. Surveys of Toronto and Ottawa, Ont., and of Montreal, Quebec, are going on.

—*Protestant Hospital for the Insane, Montreal.*—An addition to the infirmary is being erected which will double the size of the building and increase the capacity to 38 beds. It is used as a unit for bed cases.

—*The Ontario Hospital, Brockville, Ontario.*—In addition to the usual repairs and minor improvements a new barber shop has been installed in the basement and an attendant-barber and his assistant are on duty there for six days during the week. This has proved a decided comfort and is much appreciated by the men. A slip is provided for a motor boat, with accommodation for smaller boats, and there are rooms for bathers on the ground floor and a verandah on the upper story which affords a fine view down the St. Lawrence.

During the past year there was constructed an addition to the dairy barn capable of housing 60 head of cattle. This barn, although showing no elaborate construction in any detail, is equipped with modern stable conveniences; water bowls, litter-carriers, feed trucks and steel stable fittings. It is well ventilated and of pleasing appearance. The old barn has been remodeled, one-half into a calf pen and the other half into a horse stable. This arrangement permits housing the horses very comfortably without building a new horse stable as was originally planned. While this arrangement can only hold for three or four years, it is ample for present

needs and until such time as an increase of the dairy herd demands the space now occupied by the horses. The old buildings are being demolished and the end of the summer will show a fine appearing farm yard. The first unit of the new poultry plant has been constructed capable of housing 100 hens.

—*Ontario Hospital, Hamilton.*—During the latter part of 1919 the Great War Veterans of Canada became very active, and demanded an investigation into the management and care of patients in this hospital, especially during the war period when attendants were reduced in number by 60 per cent and nurses to a less percentage, owing to the complaints filed with them by ex-patients and their friends.

The Provincial Government appointed County Judge Colin G. Snider, with Counsel, who spent six days here hearing evidence and investigating records, and examining patients. The report recently filed with the Provincial Government discloses very little cause for complaint, and one of the important clauses was:

"It is a matter of great satisfaction to your Commissioner to be able to report that no charge or complaint was made by any person against the Superintendent, Assistant Superintendent, or any of the physicians—from the evidence and personal investigation and observation—your Commissioner is satisfied that the administration and management of this hospital is good and worthy of the confidence of those who have or may have occasion to have relatives or friends there."

Owing to the extreme difficulty in getting sufficient number of nurses, the Ontario Government has engaged a number of young women from Scotland; the first contingent, ten in number, having arrived for this hospital, on March 22 and give promise of making good.

Appointments, Resignations, Etc.

- ABBOT, DR. E. STANLEY, Major, Medical Corps, U. S. Army, appointed Medical Director of the Mental Hygiene Committee of the Public Charities Association of Pennsylvania.
- ADAMS, DR. GEORGE S., Assistant Superintendent of South Dakota Hospital for the Insane at Yankton, promoted to Superintendent.
- ALLEN, DR. CHARLES SANFORD, formerly State Commissioner in Lunacy of New York, died October 5, 1919, aged 95.
- APFLEGATE, DR. C. F., Superintendent of Mt. Pleasant State Hospital at Mt. Pleasant, Iowa, appointed Superintendent of Norwalk State Hospital at Norwalk, California.
- BANDY, DR. FESTUS CECIL, appointed Junior Assistant at Manhattan State Hospital at Wards Island, N. Y.
- BARRE, DR. EVERETT S., appointed Assistant Physician at Cromwell Hall, Cromwell, Conn.
- BENEDICT, DR. ARCHIBALD K., appointed Medical Intern at Middletown State Homeopathic Hospital at Middletown, N. Y., October 1, 1919.
- BLEDSE, DR. EDWIN P., Surgeon, U. S. P. H. S., assigned to Cape May, N. J., as Neuropsychiatrist.
- BLISS, DR. GEORGE S., Superintendent of School for Feeble-Minded Youth at Fort Wayne, Ind., appointed Superintendent of a similar institution operated by the U. S. Government in Honolulu.
- BOGDONOFF, DR. M. MYRON, D. D. S., appointed Dental Intern at St. Elizabeth's Hospital at Washington, D. C., March 1, 1920.
- BOGDONOFF, DR. SAMUEL, D. D. S., Dental Intern at St. Elizabeth's Hospital at Washington, D. C., promoted to Assistant Resident Dentist, February 15, 1920.
- BOONE, DR. J. E., Assistant Physician at South Carolina State Hospital at Columbia, resigned November 1, 1919, to enter general practice.
- BOONE, DR. WALTER, appointed Intern at South Carolina State Hospital at Columbia, July 25, 1919.
- BOUDREAU, DR. EUGENE M., Neuropsychiatrist to the Vocational Board, assigned to New York, N. Y.
- BOWERS, DR. PAUL E., Superintendent of Whittier State School at Whittier, Calif., resigned, and appointed Superintendent of Northern Indiana Hospital at Logansport.
- BRANN, DR. H. W., appointed Assistant Physician at Cleveland State Hospital at Cleveland, Ohio, January 1, 1920.
- BREWSTER, DR. GEORGE, Surgeon, U. S. P. H. S., assigned to Philadelphia, Pa.
- BROWN, DR. JOHN YOUNG, formerly Assistant Superintendent of Central Kentucky Asylum for the Insane at Lakeland, died October 30, 1919, from heart disease, aged 54.
- BROWN, DR. LOUIS R., appointed Senior Assistant Physician at Danvers State Hospital at Hathorne, Mass., June 23, 1919.
- BRUSH, DR. EDWARD N., Superintendent of Sheppard and Enoch Pratt Hospital at Towson, Md., for nearly 30 years, resigned September 1, 1919, to take effect on appointment of successor. Appointed Superintendent Emeritus, February 24, 1920. Successor Dr. Ross McC. Chapman assumes duties of position April 1, 1920.
- BUNKER, DR. SIDNEY M., appointed Assistant Superintendent at New Haven Hospital at New Haven, Conn.
- BURNHAM, DR. ALONZO FESTUS, formerly Assistant Physician at the Illinois State Hospitals at Jacksonville and Bartonville, died February 20, 1920, from bronchopneumonia, aged 66.
- CASE, DR. JAMES D., Superintendent of Nebraska Hospital for the Insane at Lincoln, resigned.

- CHAPMAN, DR. ROSS MCC., First Assistant Physician and Chief Executive Officer at St. Elizabeth's Hospital at Washington, D. C., appointed Superintendent of Shepard and Enoch Pratt Hospital at Towson, Md., assumes duties April 1, 1920.
- CHRONQUEST, DR. ALFRED P., appointed Senior Assistant Physician at Danvers State Hospital at Hathorne, Mass., October 14, 1919.
- CLARKE, DR. CHARLES K., Dean of the Medical Faculty of the University of Toronto, has given notice of his intended resignation.
- CONNELY, DR. EDMOND MCC., Acting Assistant Surgeon, U. S. P. H. S., assigned to New Orleans, La., as Neuropsychiatrist.
- CRUTCHER, DR. WILFORD HALL, formerly Assistant Superintendent of Nebraska State Hospital at Ingleside, died January 27, 1920, of pneumonia, aged 37.
- CURTIS, DR. BARBARA, of Central Islip State Hospital, transferred to Buffalo State Hospital.
- DUVAL, DR. LEON E., appointed Assistant Physician at Gardner State Colony, Gardner, Mass.
- EDWARDS, MR. JAMES D., appointed Assistant Steward and Supervisor of Farm Industries at Gowanda State Homeopathic Hospital at Gowanda, N. Y., July 1, 1919.
- EVANS, DR. BRITTON DUROC, Medical Director of New Jersey State Hospital at Morris Plains, died January 14, 1920, aged 61.
- EVERMAN, DR. ORD, Acting Assistant Surgeon, U. S. P. H. S., assigned to West Roxbury, Mass., as Neuropsychiatrist.
- FINLAYSON, DR. ALLEN D., Neuropsychiatrist to Bureau of War Risk Insurance, assigned to New York, N. Y.
- FINN, MRS. FLORENCE J., appointed Social Worker at St. Lawrence State Hospital at Ogdensburg, N. Y., November 22, 1919.
- FISK, DR. GEORGE C., Neuropsychiatrist to Bureau of War Risk Insurance, assigned to New York, N. Y.
- FOLK, DR. R. H., appointed Assistant Physician at South Carolina State Hospital at Columbia, February 15, 1919.
- FRANCISCO, DR. HOWARD M., M. R. C., appointed Assistant Physician at Central State Hospital at Nashville, Tenn.
- GABRIO, DR. MAX R., appointed Chief Resident Physician at Philadelphia Hospital for the Insane at Philadelphia, Pa.
- GARRETTSON, DR. WILLIAM V. P., appointed Consulting Neurologist and Psychiatrist to Manhattan State Hospital at Wards Island, N. Y.
- GLOVER, DR. JOHN F., formerly Assistant Superintendent at Southern Indiana State Hospital at Evansville, died December 28, 1919, from heart disease, aged 64.
- GODDARD, HENRY H., Ph. D., of Vineland, N. J., appointed Director of the Bureau of Juvenile Research at Columbus, Ohio.
- GOKEY, DR. HAROLD L., appointed Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., January 15, 1920.
- GOLDSTEIN, DR. A. T., of Utica State Hospital at Utica, N. Y., returned from military duty October 17, 1919, and resigned to enter private practice February 10, 1920.
- GOSLINE, DR. HAROLD I., Major, Medical Corps, U. S. A., appointed Clinical Director and Pathologist at State Hospital for Mental Diseases at Howard, R. I.
- GRAHAM, DR. CHARLES R., appointed Assistant Physician at Ontario Hospital at Hamilton.
- GREGORY, DR. HUGH S., Resident Pathologist at Craig Colony at Sonyea, N. Y., appointed Pathologist at Binghamton State Hospital at Binghamton, N. Y., April 1, 1920.
- GRIFFITHS, DR. DAVID G., Superintendent of Nebraska Institution for Feeble-Minded at Beatrice, appointed Superintendent of Nebraska Hospital for the Insane at Lincoln.
- HADLEY, DR. ROLLIN V., Medical Intern at Gowanda State Homeopathic Hospital at Gowanda, N. Y., resigned September 1, 1919.
- HALL, DR. ROSCOE W., appointed Senior Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., November 22, 1919.
- HALLOCK, DR. FRANK M., Passed Assistant Surgeon, U. S. P. H. S., assigned to Waukesha, Wis., as Neuropsychiatrist.
- HAMILTON, DR. ALLEN McLANE, formerly Professor of Mental Diseases in Cornell University Medical College, died suddenly November 23, 1919, aged 71.

- HARRINGTON, DR. JOHN J., Neuropsychiatrist to the Vocational Board, assigned to New York, N. Y.
- HARRIS, DR. JOSEPH EDWIN, Assistant Physician at Missouri Colony for Feeble-minded and Epileptic at Marshall, died October 11, 1919, aged 59.
- HASSALL, DR. JAMES C., Clinical Director at St. Elizabeth's Hospital at Washington, D. S., resigned October 31, 1919.
- HATCHER, DR. GEORGE A., Assistant Physician at Central State Hospital at Nashville, Tenn., resigned to enter private practice.
- HAYS, DR. GEORGE A. B., Superintendent of East Louisiana Hospital for the Insane at Jackson, died December 20, 1919, aged 72.
- HELDT, DR. THOMAS J., Acting Assistant Surgeon, U. S. P. H. S., assigned to Waukesha, Wis., as Neuropsychiatrist.
- HINCKLEY, DR. LIVINGSTON SPRAKER, formerly Superintendent of Essex County Hospital for the Insane at Cedar Grove, died February 22, 1920, from pneumonia, aged 64.
- HOGAN, DR. O. F., Assistant Physician at South Carolina State Hospital at Columbia, resigned June 1, 1919, to enter general practice.
- HYDER, DR. HERMAN P., appointed Junior Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., February 1, 1920.
- JACKSON, DR. J. ALLEN, Chief Resident Physician of the Philadelphia Hospital for the Insane at Philadelphia, Pa., appointed Superintendent of State Hospital for the Insane at Danville, Pa.
- JOHNSON, DR. LOREN B. T., appointed Senior Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., November 11, 1919.
- KARPMAN, DR. BENJAMIN, appointed Medical Intern at St. Elizabeth's Hospital at Washington, D. C., October 17, 1919.
- KEMPTON, DR. EARL J., Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned September 30, 1919.
- KERN, DR. W. B., Superintendent of Norwalk State Hospital at Norwalk, California, resigned March 1, 1920, to specialize in mental and nervous diseases in Los Angeles.
- KILLAM, DR. FRANKLIN H., appointed Junior Assistant Physician at Danvers State Hospital at Hathorne, Mass., March 10, 1919.
- KINNER, MISS AUGUSTA R., appointed Field Worker and After Care Agent at Gowanda State Homeopathic Hospital at Gowanda, N. Y., October 22, 1919.
- KNAPP, DR. PHILIP COOMBS, formerly Trustee of the Boston Insane Hospital, died February 22, 1920, aged 61.
- LEONARD, DR. THOMAS H., Superintendent of Lincoln State School and Colony at Lincoln, Ill., resigned.
- LESLIE, DR. FRANK E., Senior Surgeon, U. S. P. H. S., assigned to Augusta, Ga., as Neuropsychiatrist.
- LIVINGSTON, DR. WALTER R., appointed Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., September 19, 1919.
- MACFARLANE, DR. WILLIAM WALLACE, formerly Superintendent of Agnew State Hospital at Agnew, Cal., died October 30, 1919, aged 85.
- MCLAUGHLIN, DR. C. M., appointed Third Assistant Physician at Athens State Hospital at Athens, Ohio.
- MCVEY, DR. JOHN L., Assistant Physician at Ohio Hospital for Epileptics at Gallipolis, transferred to Massillon State Hospital at Massillon, Ohio.
- MAY, DR. HERMAN, of Buffalo State Hospital at Buffalo, N. Y., resigned to enter private practice.
- MEAD, DR. JOHN ABNER, formerly Assistant Physician at Kings County Lunatic Asylum at Flushing, N. Y., died January 12, 1920, from pleuro-pneumonia, aged 78.
- MEAD, DR. LEONARD CHARLES, for nearly 30 years Superintendent of South Dakota Hospital for the Insane at Yankton, died January 10, 1920, aged 63.
- MELVIN, DR. GEORGE M., U. S. P. H. S., assigned to Marine Hospital at Staten Island, N. Y.
- MEREDITH, DR. HUGH B., Superintendent of State Hospital for the Insane at Danville, Pa., for 28 years, resigned.
- MILLS, DR. CHARLES K., Chief of Staff of the Philadelphia General Hospital and founder of the Neurologic Department has resigned after 42 years' service, and appointed Consultant to the Neurologic Department.

- MOERSCH, DR. FRED P., appointed Resident Physician at Psychopathic Hospital at University of Michigan, Ann Arbor, Mich.
- MOYLE, DR. HARRY B., appointed Medical Intern at Buffalo State Hospital at Buffalo, N. Y.
- MUDGE, DR. ERWIN H., appointed Assistant Physician at Gowanda State Homeopathic Hospital at Gowanda, N. Y., May 1, 1919.
- MUNRO, DR. CATHERINE, appointed Woman Physician at South Carolina State Hospital at Columbia, October 25, 1919.
- MURPHY, DR. DENNIS J., appointed Senior Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., January 1, 1920, being transferred from Canal Zone.
- NEFF, DR. IRWIN H., Superintendent of Norfolk State Hospital at Pondville, Mass., appointed Superintendent of Oak Grove Hospital at Flint, Michigan.
- PENDELTON, DR. A. S., Senior Surgeon, U. S. P. H. S., assigned to Ft. Wm. Henry Harrison, Mont., as Neuropsychiatrist.
- PERLEY, DR. ARTHUR E., appointed Assistant Physician at New Hampshire School for Feeble-Minded at Laconia.
- PETTIBONE, DR. RALPH S., Senior Assistant Physician at Willard State Hospital at Willard, N. Y., allowed leave of absence to attend a course of lectures at the Psychiatric Institute, New York, beginning March 15, 1920.
- PINTO, DR. NICHOLAS, Passed Assistant Surgeon, U. S. P. H. S., assigned to Cape May, N. J., as Neuropsychiatrist.
- POTTER, MISS G. MARION, appointed Principal of School for Nursing of St. Lawrence State Hospital at Ogdensburg, N. Y., January 1, 1920.
- PRATT, DR. GEORGE K., appointed Assistant Physician at Oak Grove Hospital at Flint, Mich.
- REED, DR. THEODORE D., Assistant Physician at Dannemora State Hospital at Dannemora, N. Y., returned after 26 months army service, 13 in France. He was presented the Medal of Honor by the French Government for valor in providing civilian relief under shell fire, and was also cited on two occasions by the American forces for valor and bravery in operating a dressing station under shell fire, and in giving relief to civilians under shell fire.
- RICHTER, DR. WALDEMAR G., appointed Medical Intern at Gowanda State Homeopathic Hospital at Gowanda, N. Y., July 4, 1919.
- ROBERT, DR. HAROLD R., Senior Assistant Physician at Dannemora State Hospital at Dannemora, N. Y., returned after 20 months army service.
- ROBINSON, DR. BRUCE B., appointed Medical Intern at St. Elizabeth's Hospital at Washington, D. C., February 2, 1920.
- ROSS, DR. DONALD E., Surgeon, U. S. P. H. S., assigned to Dansville, N. C., as Neuropsychiatrist.
- RUSSELL, DR. CLARENCE L., Senior Assistant Physician at Utica State Hospital at Utica, N. Y., assigned to the Psychiatric Institute for intensive work in pathology and bacteriology with a view of assuming charge of this work at Utica.
- RUSSELL, DR. FREDERICK JAMES, Superintendent of Letchworth Village at Thiells, N. Y., died December 21, 1919, following an operation for brain tumor, October, 21, aged 46.
- SARGENT, DR. GEORGE F., Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., resigned to open a sanitarium.
- SCRUTCHFIELD, G. E., Acting Assistant Surgeon, U. S. P. H. S., assigned to Philadelphia, Pa.
- SEIBERT, DR. WILLIAM ADAMS, Trustee of State Homeopathic Hospital at Allentown, Pa., died October 7, 1919, aged 60.
- SHAW, DR. ARTHUR L., Senior Assistant Physician at Craig Colony at Sonyea, N. Y., resigned November 1, 1919, to enter private practice in Camden, N. Y.
- SHEA, MR. JOSEPH F., Steward at Gowanda State Homeopathic Hospital at Gowanda, N. Y., since 1914, died December 12, 1919, after a few weeks illness.
- SHINO, DR. TIMOTHY E., Junior Assistant Physician at Danvers State Hospital at Hathorne, Mass., resigned December 31, 1918.
- SHOCKLEY, DR. FRANCIS M., Neuropsychiatrist to Bureau of War Risk Insurance, assigned to New York, N. Y.

- SIDEBOTHAM, DR. HENRY LARNED**, formerly Resident Physician at State Hospital for the Insane at Norristown, Pa., died November 16, 1919, from cerebral hemorrhage, aged 54.
- SLEYSTER, DR. L. ROCK**, Medical Superintendent of Milwaukee Sanitarium at Wauwatosa, Wis., elected Secretary-Treasurer of the Wisconsin Branch of the Medical Veterans of the World.
- SMITH, DR. CURTIS E.**, appointed Pathologist and Clinical Director at Danvers State Hospital at Hathorne, Mass., September 8, 1919.
- SMITH, DR. PERCY L.**, appointed Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., January 20, 1920.
- SMITH, DR. S. E.**, Superintendent of Eastern Indiana Hospital for the Insane at Richmond, elected Vice-President of the Board of Trustees of Indiana University.
- SOUTHARD, DR. ELMER ERNEST**, Director Psychopathic Department, Boston State Hospital at Boston, Mass., and recently President of the American Medico-Psychological Association, died in New York City February 8, 1920, after a two days illness of pneumonia.
- SPELLMAN, DR. DWIGHT SEYMOUR**, Senior Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., died December 18, 1919, aged 53.
- SPRINGER, DR. JOE G.**, appointed Superintendent of Southwestern Insane Asylum at San Antonio, Texas.
- STEARNS, DR. A. WARREN**, formerly Assistant Physician at Boston Psychopathic Hospital and recently in Naval Service, appointed Executive Secretary of the Massachusetts Society for Mental Hygiene.
- STEWART, DR. SAMUEL J.**, appointed Superintendent of Nebraska Institution for Feeble-Minded at Beatrice.
- STOUT, DR. E. G.**, connected with the Utica State Hospital at Utica, N. Y., for more than 20 years, resigned June 30, 1919, to assume charge of a private sanitarium at Beacon, N. Y.
- STURGIS, DR. KARL B.**, Lieutenant, Medical Corps, U. S. A., appointed Physician at State Hospital for Mental Diseases at Howard, R. I.
- TAYLOR, DR. MELVIN**, Surgeon, U. S. P. H. S., assigned to Dansville, N. Y., as Neuropsychiatrist.
- TODD, DR. LEONA E.**, of Hudson River State Hospital, transferred to Buffalo State Hospital.
- TRAVER, DR. H. A.**, appointed Assistant Physician at Craig Colony at Sonyea, N. Y., November 24, 1919.
- TRENTSCH, DR. PHILIP J.**, appointed Junior Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., March 3, 1920.
- WHEATON, DR. HARRY WHITNEY**, Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., resigned April 1, 1920.
- WILHITE, DR. O. C.**, Senior Surgeon, U. S. P. H. S., assigned to Philadelphia, Pa., as Neuropsychiatrist.
- WILMARTH, DR. ALFRED W.**, Superintendent of State Home for Feeble-minded at Chippewa Falls, Wis., for 22 years, resigned.
- WOODS, DR. ANDREW H.**, appointed Professor of Neurology at Union Peking Medical School, Peking, China.
- WORDEN, DR. V. S. W.**, Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Assistant Physician, February 2, 1920.
- WORTHING, DR. HARRY J.**, Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Senior Assistant Physician, November 11, 1919.
- WRIGHT, DR. ARTHUR BROWNELL**, formerly Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., died February 4, 1920, aged 51.
- WRIGHT, DR. FREDERICK**, of Buffalo State Hospital at Buffalo, N. Y., resigned to enter private practice.
- YOUNG, DR. BEVERLY**, Superintendent of Southwestern Insane Asylum at San Antonio, Texas, resigned.
- ZIMMERMAN, DR. ROBERT F.**, formerly of Utica State Hospital at Utica, N. Y., for the past two years Division Psychiatrist to the 42d Division, returned from military service and resumed his hospital duties August, 1919.

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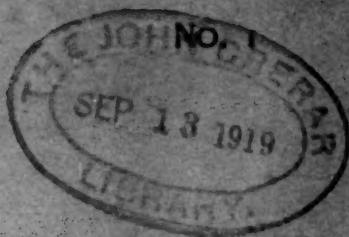
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